

LOCATIONAL PATTERN OF INDUSTRIES IN UTTAR PRADESH

(1960-1978)

THESIS

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By

ASHUTOSH JOSHI

Supervisor

Dr. T. S. PAPOLA

Professor

Giri Institute of Development Studies, Lucknow.

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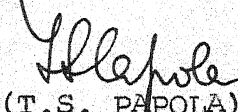
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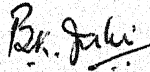
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This is to certify that the enclosed Thesis entitled "Locational Pattern of Industries in Uttar Pradesh", embodies the work of the candidate, Shri Ashutosh Joshi himself and that he worked under my supervision to complete his study for the period required under Ordinance 6. It is further certified that he has put in more than 200 days of attendance at the Giri Institute of Development Studies, a recognised Centre for Ph.D. of the University, to work under my supervision.

November 28, 1987


(T.S. PAPOLA)
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PREFACE

Uttar Pradesh is among the industrially less developed states of India. However, over the years not only has its industrial sector registered a reasonable growth but there has also been a considerable diversification of the industrial sector as well, and the new industry groups to emerge are not dependent on local raw material availability. As a result, industries are found located in a much larger number of districts today.

The problem of industrial location has been one of considerable significance. The fact that removal of inter-regional imbalances and backward area development have become important objectives of economic and industrial policy, industrial location has assumed special significance even from the policy view point. In this study a modest effort has been made by me to try and analyse the trends in growth of the industrial sector and of the locational pattern of industries in Uttar Pradesh. An attempt has also been made to see the extent to which the promotional efforts of the state have been successful in achieving the goal of balanced development.

I have had the privilege of getting help from

various persons and institutions which has been of great help in completing the study. I, therefore, wish to record my gratefulness towards them here.

I am deeply indebted to Dr. T.S. Papola, my supervisor, for the pains he took over my work not only while he was at the Giri Institute but even after going on leave from the Institute to take up an assignment at the Planning Commission, New Delhi. The study could not have been completed but for his patient guidance and constant encouragement. However, I alone am solely responsible for the limitations in my work.

The Indian Council of Social Science Research, New Delhi, was generous enough to grant me a Fellowship under their salary protection scheme. Although I availed this facility for only one year, before taking up an assignment at the Giri Institute, the duration of scholarship was of immense help in devoting my entire time going through the relevant literature and data collection. I am thus very thankful to the ICSSR, New Delhi for having granted me the Fellowship.

Except for the initial period of one year while I availed the ICSSR Fellowship, I also had a full time

official assignment. Thus, for unavoidable reasons, my work got delayed beyond the stipulated time. The authorities of the Kumaun University were very kind and considerate to have taken my case sympathetically and granted me a period of grace to submit my thesis. I shall always remain obliged to them for their kind gesture.

My employer, the Giri Institute of Development Studies, Lucknow, not only granted me leave for pursuing my work but extended other facilities as well for which I am very thankful. My thanks are also due to all my colleagues at the Giri Institute especially Dr. P.N. Pande, Sri G.S. Mehta and Mrs. Kavita Agarwal (Librarian) whose constant encouragement led to the successful completion of the study. This list would be incomplete without the mention of Dr. D.N. Kakkar who too proved a source of inspiration throughout.

Finally I wish to thank Mr. P.J. Devassykutty, Mr. N.B. Bhatt and Mr. K. Manoharan for the personal pains they took over handling my typing work efficiently at its various stages.

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CHAPTER I

Some Theoretical Proposition of Industrial Location And The Present Study

CHAPTER I

The Theoretical Propositions of Industrial Location

Economic development, by its very nature, is a dynamic process characterised by various types of imbalances. Nowhere is this more striking than in the spatial dimensions of growth. Growth generally tends to get concentrated in certain regions. In the case of non-agricultural activities like manufacturing, it generally gets concentrated in a few nodal metropolitan centres. Whether this spatial imbalance is a natural concomitant of the growth process or is partly a result of imperfectly functioning markets and externalities is a debatable issue.¹ Even if spatial concentration is efficient, one is faced with the equity issue which is equally important in a country like India, where the industrial development of different regions has been highly uneven.

Industrialisation is a wide ranging process which implies not only development of various industries but

¹A. Udai Sekhar; Industrial Location Policy : The Indian Experience, World Bank Staff Working Papers No.620, World Bank, Washington D.C. (1983), p.1.

changes in the structure; technology and organisation of economic activity as well. Not only does industrialisation have an impact on economic activity it also affects social organisation, relations and attitudes. Within the sphere of economic activity however, industrialisation is a process in which a series of changes in the strategic production functions take place as a result of mechanisation of an enterprise, building of a new industry, opening of a new market and the exploitation of new territory. Industrialisation thus involves a process of deepening and widening of capital.² Deepening of capital refers to the increased amount of capital being employed per unit of output whereas the growth of capital formation along with increases in output and final goods is called capital widening. Industrialisation, therefore, leads to increases in productivity and this, in turn, leads to higher average incomes.

As has already been pointed out, the very process of growth is such that it gets unevenly distributed. The growing awareness and perception of the regional

²Chang, P.K; Agriculture and Industrialisation : The Adjustments that Take Place as an Agricultural Country is Industrialised, Cambridge (Massachusetts), 1948, p.69.

problem has therefore attracted the attention of academics, planners as well as administrators to suggest measures through which a more balanced growth can be achieved. Locational diversification of industries thus has importance from the analytical as well as policy view point. We shall now try to look at some of the theories of location in order to see how industries get located in a specific area.

There are numerous locational theories which point out the different factors which are responsible for the clustering of economic and industrial activities in specific locations. We shall, therefore, try to examine some of the basic elements of some of these theories.

1.1 Theories of Location

A critical view of the pattern of growth of locational theories reveals that to begin with transport, labour and other direct costs were considered as the important factors in locational decision making of the entrepreneur. Later on factors such as demand, institutions, personal reasons and other non-pecuniary factors were also incorporated in the locational

theories so as to make it compatible with general equilibrium framework. These theories can be classified into four broad groups based on the motivation attributed to the decision making entrepreneur.

(a) Theories with a Focus on Cost Minimisation : Among the theories which come in this category the Weberian theory³ is one of the most important and is predominantly transport oriented. Optimum location according to Weber is determined at the site where transport costs are minimised. According to Weber transport costs are determined either at the source of the raw material or at the place of consumption. He has also included labour cost and economies of agglomeration are factors affecting location. However agglomeration economies did not play a significant role in his theory since he did not deal with them in detail. All the same he was the first to emphasise the economies emerging from the concentration of several plants of the same industry in one location.

³Weber, A; Theory of the Location of Industries,
Translated in English by Carl J. Fredrich (1929).

Walter Isard⁴ further improved and restructured the transportation aspect highlighted by Weber and so his model also identifies optimum location of an industry at the place where transport costs are minimum. The theory was an improvement on the Weberian theory since it incorporates more realistic transport structures. In his model Isard has been able to accommodate the zonal character of many transport structures, high terminal costs due to break at transport junctions, and also deals with non-proportional transport rates. Transport cost, according to Isard, can be regarded as an input in the production process and so the locational choice becomes similar to the choice of factor combinations.

The theory of Weber combined with the subsequent improvements made on it by Isard was primarily a least cost theory of location based upon the minimisation of transport cost. With the passing of time it was realised that there are many other costs besides as well which varied considerably between one location and the other.

⁴Isard, W; Location and the Space Economy, M.I.T. Press, Cambridge, 1956.

Some of these costs are those of raw material, wages and site costs and the simple framework of minimising transport cost was felt to be insufficient to explain plant location. Thus these theories came in for criticism and various other theories were developed where the effort was primarily directed towards minimising total cost. The contribution of Hoover is significant in this context. In Hoover's model⁵ all costs have been classified as transportation and production costs. The importance of transport cost has been demonstrated under conditions of constant returns to scale.

However, theories related to cost minimisation had only a limited applicability since they failed to incorporate demand and revenue aspects in their analysis.

(b) Theories related to Revenue Maximisation : As against the theories which centred their attention on minimising cost there was the development of theories

⁵Hoover, E.M; The Location of Economic Activity, Mc Graw Hill (1948).

which kept maximisation of revenue as a major factor responsible for spatial variation of economic activity. Hotelling⁶ and Smithies⁷ were among the first to contribute towards revenue maximising theories. Their basic assumption is that location determines revenue rather than cost. Under the assumption of the spatially distributed market, the primary factor affecting the selection of site is the location of competitive firms. As a result firms move away from minimum cost locations primarily because of incentives to agglomeration.

The model of locational inter-dependence states that even in the absence of internal and external economies of scale agglomeration may be achieved. This has been done under the assumptions of two or three firms, linear and not areal markets and costless and instantaneous relocation. The duopoly case taken up by Hotelling shows that duopolist will tend to agglomerate around

⁶Hotelling, H; Stability in Competition, Economic Journal, March 1929.

⁷Smithies, A; Optimum Location in Spatial Competition, Journal of Political Economy, June, 1941.

linear markets even though the costs at the site are high. This is so since only with agglomeration there will be no tendency on the part of one firm to intrude over the protected market of the other firm.

Further developments by Lerner and Singer⁸, with three firms shows that there would be complete instability in location and to handle the situation the application of game theory is a potential method. With more than three firms there will either be dispersal or clustering of pairs of firms depending upon the prevailing location pattern at the time of entry of a new firm. The location of the firms will be non-optimal although the extent of non-optimality will be less as the number of firms increases.

The implementation of revenue maximising objective of location will be different between space and spaceless economy. The main consideration in the case of the spaceless economy will be short run revenue maximisation i.e. the firm will produce to the level where total revenue is maximum and marginal revenue zero.

⁸Lerner, A.P. and Singer, H.W; Some Notes on Duopoly and Spatial Competition, Journal of Political Economy, Vol.45, 1939, pp.145-186.

In a space economy, on the other hand location and output are both variables. This, therefore, calls for estimation of total revenue as well as costs at all the levels of output and site. This will be particularly so in the case of location decision since relocation costs are very high due to the time horizon. The basic objective in this case will thus be long run maximisation rather than short run maximisation as was the case in a spaceless economy. Under conditions where both location and output are variables it becomes increasingly difficult for a firm to make a correct estimate of total revenue and total cost. Consequently the degree of error increases and most of the firms whose location decision is motivated by revenue maximising objective take an ad-hoc decision because of the complications and intricacies involved in precise calculation of total revenue and costs.

(c) Maximisation of Profit : The theories falling in this group try to analyse the effect of location on revenue as well as cost. This was comprehensively

attempted by Greenhut⁹ and refinements were made to it by Moses¹⁰ and Churchill.¹¹ Greenhut has developed a model for locational equilibrium of firms which aim at profit maximisation under the conditions of cost and demand variations. Equilibrium is conditioned by the objective that each firm will select a location from which it is able to supply its products to the buyers at the total minimum cost. The entry of a new firm alters both the cost and relative demand of the firm. As a result, the search for locating this firm at the side of maximum profit will reduce the market area of the firm and excess profits will be eliminated via the tangency of average revenue and average cost.

Christaller, the originator of the Central Place Theory for explaining regional development in terms of

⁹Greenhut, M.L; (i) A Theory of the Firm in Economic Space, Appleton-Century-Crafts, New York, 1970; and (ii) Integrating the Leading Theories of Plant Location, Southern Economic Journal, Vol.18, 1952, pp.525-538.

¹⁰Moses, L.N; Location and Theory of Production, Quarterly Journal of Economics, Vol.72, 1958, pp.259-272.

¹¹Churchill, G; Production, Technology, Imperfect Competition and Theory of Location, A Southern Economic Journal, Vol.34, 1967, pp.86-100.

a hierarchy of cities, towns and villages. In the hierarchy of centres, the higher order centres should provide a wider array of services and serve a wider population than the low order sub-centres.¹² Christaller, in his model, took those goods which have a maximum spatial range. The range is determined by factors like economies of scale, transport cost, consumer's preference and relative spatial friction. Goods of the same range will be produced at equal distances from one another like the corners of a lattice of equilateral triangles. The goods of the maximum range shall be produced at the very centre of the system of centres. This will be followed by production of goods of lesser range in and around the centre and as the goods of the next lower range are produced, their production points will move away from the main centre to the third order centres. This process shall continue till the goods of the lowest range are taken into account and in this way the ordering of centres will take place. However, the

¹²Pavaskar and Kasbekar; Regional Development, Growth Pole Theory for Propulsive Industry, The Economic Times, May 3, 1984.

applicability of his theory is confined to the service sector. Its scope could have been widened had he incorporated non-agricultural activities which would provide external economics and division of labour.

On the basis of Christallers theory, Losch built up a hierarchy of Central Place beginning from the lowest order and incorporating non-service activities in its functions. The contribution of Losch,¹³ which lies somewhere in between maximisation of revenue and maximisation of profit theories merits special attention. In Losch's view, the best location of an industry would be that which covers the largest market and earns the largest sales revenue. His theory is based on the assumption of evenly distributed population over an area, identical tastes among consumers, identical production conditions and identical conditions for each buyer.

Thus there is one superior centre where all goods are produced. Smaller centres specialise in real sense

¹³Losch, A; "Die Rountiche Ordnung Der Wirtschaft" (2nd edition), Jena, 1944, Translated by Stolper, W.F; as the Economics of Location, New Haven, 1954.

and supply their specialised products to the larger centres. In the process of development different firms expand their markets and at some places these markets overlap each other. Under such a situation consumers choose a centre which is nearest to them. This results in the division of the market centre and forms hexagonal market areas for different locations. From the producer's view point the location which provides the widest access to the markets of the different products will be the most preferred one. There is, therefore, the tendency of units to concentrate in large urbanised centres instead of their dispersal over less developed towns and villages. Which command a small and relatively uneconomic markets. In the absence of the economies of scale of production, the model implied both revenue and profit maximisation. Loschian approach came under severe criticism for its unrealistic assumptions by Isard, Greenhut¹⁴ and Richardson.¹⁵

¹⁴Greenhut, M.L; Plant Location in Theory and Practice, Chapel Hill, 1956.

¹⁵Richardson, H.W; Regional Economics : Location Theory, Urban Structure and Regional Change, Weindenfield and Nicholson, London, 1969.

On the basis of concepts put forward by Christaller and Losch, some economists have explained the agglomeration of human activities at a given location and to direct spatial development process to achieve large scale economies and inter-industry linkages. These theories are the Growth Pole Theories. This theory suggests that setting up of a large and impulsive industry in a region can lead to the development of the whole region through the development of forward and backward linkages. The linkages can be achieved if organic links exist between selected key industries and the periphery so that the multiplier process operates effectively. Besides, infrastructure should also be developed especially transport and communication, through which growth impulses can be spread around. The Growth Pole concept is based upon the emergence of a leading manufacturing industry, which would drive forward the growth of other firms in that region. In the case of a relatively backward area this industry may be a resource based one around which ancillaries may be developed for obtaining the desired results.

Perroux was the first economist to introduce this concept. According to him a growth pole was a centre in

abstract space "from which centrifugal forces emanates and to which centripetal forces are attracted. Each centre being the centre of attraction and repulsion has its own field which is set in the field of other centres".¹⁶

Thus regional development can be initiated by setting up a large and propulsive industry having innovative potentials. Its forward and backward linkages can encourage the growth of other firms. The Growth Pole concept assumes that , (i) economic activities tend to agglomerate around a focal point, (ii) there are strong inter-industry links and inter-dependence between industries and (iii) the key industry is technically advanced and can diffuse its advanced know-how to the other industries of the region. The theory has a number of weaknesses. Besides some of the vague and undefined propositions of the theory, the major criticism is that it has not come up to any empirical tests. According to Hansen¹⁷ the empirical weakness lies between development

¹⁶Perroux, F; Note Sur la Notion De Pole De Croissance, Economic Applique, Vol.8, 1955, translated from French in Economic Policy for Development, Livingstone, I. (ed.), Penguin, 1971.

¹⁷Hansen, N.M; Development Pole Theory in a Regional Context, Kyklos, Vol.XX, 1967, reprinted in Richardson, H.W; Regional Economics : A Reader, Macmillan, 1970.

of economic space and geographic space.

Moreover, the theory has only doubtful application in developing countries. In India, for example, development of public sector undertakings in backward regions failed to induce structural changes since the enterprise was unable to establish backward and forward linkages.

Boudeville gave a geographical orientation to the Growth Pole theory. But he depends much on Perroux model and sees the agglomeration advantages of economic activity in three ways : (a) through internal economies; (b) external economies to the firm but internal to the industry; and (c) economies external to the industry but internal to the urban complex, or the economies of urbanisation. Boudeville's theory too is not without limitations. To begin with, if the growth pole is to exercise an innovative and dominating influence over the region then only one growth pole can exist in the entire region. Besides his assumptions are also questionable.

Thus although the Growth Pole theory is dynamic it is partial while the Central Place theory is more general but static in nature. An integration of these two

theories with the theory of spacial and social diffusion of innovations, might give a dynamic general theory which can better explain the existing spatial structure of human activities. Myrdal's theory of cumulative causation is close to this approach.

Myrdal and Hirschman have both explained the mechanism through which dual societies develop. Accepting the Growth Pole hypothesis Hirschman advocates that the Growth Pole becomes a development pole and diffuses development impulses not so much through inter-industry linkages as through social interaction processes.¹⁸ Myrdal disapproves the idea of stable equilibrium and has challenged the effectiveness of the equilibrating mechanism in reducing regional disparity. Market forces, according to Myrdal, tend to increase rather than decrease inequality between regions.

The model by Myrdal states that economic growth takes place in a cumulative manner, "once a particular region starts growing faster, then the average 'efficiency wage' in that region tends to fall. Consequently,

¹⁸Hirschman, A.C; The Strategy of Economic Development, New Haven, 1969.

this would tend to acquire a cumulative competitive advantage over relatively slow growing regions. Through this mechanism the process of cumulative causation would work".¹⁹ Two kinds of opposite forces result with the growth of a region. They are the 'spread effects' which are beneficial and favourably affect the less developed regions. This may be by way of additional employment avenues to people of nearby areas, reduction in the levels of unemployment and increased productivity of the region. Increased productivity, in turn, leads to increase in employment which will generate a further demand for food-grains and raw materials. These can be procured from the adjoining less developed regions. In this way a chain reaction is set into motion and in the long run the region itself is developed. The other effect is the 'backwash effect'. During the early stages of development, economic activity tends to concentrate on a particular point adversely affecting the less developed regions around it. This happens because all types of workers get attracted to the place of economic activity and there might

¹⁹ Myrdal, G; Economic Theory and Underdeveloped Regions, Indian Edition, Vora and Co, Bombay, 1973.

even be movement of capital as well. Thus the developed area develops further at the cost of the less developed ones.

(d) Satisficing Behaviour : The fourth group of locational theories - related to satisficing behaviour - have emerged mainly as a result of the theoretical and empirical shortcomings of the revenue and profit maximising theories. It is difficult to go for profit maximisation if the firm is unable to anticipate its competitor's reaction to its own decision. The unpredictability of future changes in the spatial cost and revenue as well as the difficulties in measuring external economies further weakens the profit maximisation theory. Thus, even if profit maximisation governs the behaviour of the firm it is subjective rather than objective and the ex-ante prediction of the best site becomes very difficult.

Nor is profit maximising theory supported by empirical studies. Profit maximising criteria requires detailed investigation of cost and revenue at various alternative sites, while empirical findings suggest that decisions regarding location of a unit are made quickly after

considering very few sites. Townroe²⁰ suggests that the location decision is only one element in the broader set of decisions.

Recent studies conducted by Law,²¹ Loasby,²² Needleman and Scott²³ have highlighted the following facts :

- i. Location decisions are taken at the point of emergency and under compulsion. The decision is therefore speedy and without profit motive and is considered to be better than ideal decision;
- ii. There is rarely any systematic and precise calculation of cost and revenue at alternative sites; and
- iii. Entrepreneurs generally try for locations which are nearby and easily obtainable. Selection is, therefore, made between the sites which are found satisfactory among the easily accessible ones.

²⁰Townroe, P.M; Location Choice and Individual Firm, Regional Studies, Vol.3, 1969, pp.115-124.

²¹Law, D; Industrial Movement and Locational Advantage, Manchester School, May 1964, pp.131-154.

²²Loasby, B.J.; Making Location Policy Work, Llyods Bank Review, January 1967, pp.34-47.

²³Needleman, L. and Scott, B; Regional Problems and the Policy of Attracting Industry to Peripheral Regions of Britain, The Lothians Regional Survey and Plan (HMSO, Edinburgh, 1966).

The advocates of the satisficing theories say that business firms instead of seeking to maximise profit or revenue may seek to achieve the minimum objective of long run viability and earn a reasonable level of profit.²⁴ The implicit behaviour behind the above objective is called 'satisficing'. The firms, therefore, tend to get located near the centres of agglomeration and at sites where future costs are not expected to rise indiscriminately. Risky locations in non-industrialised areas and areas of high congestion cost are avoided. These theories also give weightage to the psychic income emanating from the exercise of locational preferences and other personal factors such as the desire to save time and effort in the search for sites and general facilities around the site. Although there is indeterminacy in the satisficing behaviour yet it has the advantage of taking into account psychic income and is also capable of explaining why a site was selected when other more profitable sites existed. The theory is in tune with modern organisation theory which states that decisions evolve out of group processes and do not directly reflect the stable objective

²⁴ Simon, H.A; Theories of Decision Making in Economics, American Economic Review, Vol.49, pp.253-283.

function. Thus the theory is more realistic although its predictive power gets considerably reduced.

To sum up, location and dispersal of economic activity among different units of space has been a subject of great analytical and policy significance. For a long time the theoretical analysis of the problem was carried out in a relatively simple framework. The traditional theories of location and spatial diversification were formulated when industrial structure of most spatial units were dominated by natural resource based and directly consumer oriented industries. Optimum location of an economic activity was simply determined by the balance between location and weight-distance characteristics of the material and output. The changes that have taken place in the structure of industries, especially over the last fifty years leave the traditional theories incompetent to explain location and spatial diversification. First, most industries today are not predominantly natural resource based. Second, even the production process has undergone a change and many units today use semi-processed and intermediate products as their inputs rather than natural raw materials thus some units produce for other producers and not for the final consumer. Third, with a

change in organisation and size of the production units factors like infrastructure, power, cheap labour force and finance etc. have become equally, if not more, important besides raw material supply and market. Fourth, the marketing system has also undergone a change along with large scale production. What is of immediate importance is not so much the location of the market as such but the availability of marketing arrangements and networks. Moreover, availability of transport facilities (not just the transport cost), infrastructure facilities, finance, industrial agglomerations and marketing network have emerged as significant factors in location, sometimes overshadowing the importance of the basic raw materials and the ultimate market.²⁵

1.2

The Present Study : Scope and Objectives

As has already been pointed out, the problem of industrial location has been subject of analytical significance. From the view point of policy also the problem has assumed special significance with the acceptance of inter-regional balance and development of backward areas

²⁵Papola, T.S; Spatial Diversification of Manufacturing Industries, Giri Institute of Development Studies, Lucknow, Occasional Paper No.3, 1978, pp.1-3.

as important objectives of economic and industrial policy. The process of achieving regional balance dates back to 1968 when the government appointed the Pandey Working Group to classify some States as industrially backward. This group also selected some indicators on the basis of which certain districts within the backward States were identified as backward. Subsequently the Wanchoo Committee was appointed to suggest a package of incentives which could be offered to the backward districts in order to facilitate the process of industrial development in them.

The fact that, over time, industrial development has become less dependent on natural endowment of a region or location only adds to the scope of spatial diversification of industrial activity, and to the possibility of making a programme of assistance, incentives and subsidies effective in the industrial development of backward areas. But the question of type, extent and procedure of incentives and their relative importance vis-a-vis infrastructure need to be investigated in order to make the promotional programme more fruitful.

Since not much work had been done on these lines in Uttar Pradesh the study was undertaken to try and analyse

the locational pattern of industries in the State with special reference to the new industrial activity started between 1961 and 1980-81 with the following primary objectives :

- i. to measure concentration and diversification of industries among various districts,
- ii. to examine the trends in distributive pattern of the manufacturing units among different districts,
- iii. to identify and analyse the factors responsible for the observed locational pattern, and
- iv. to draw conclusions and implications for formulating a viable and workable policy for wider dispersal of manufacturing activity particularly for the backward areas of the State.

1.3 Nature and Source of Data

The study is primarily based on secondary information compiled and collected from various government offices. The bulk of the data related to registered factories on a district-wise basis consisting of their numbers, fixed and working capital, employment, total value of inputs, output and value added were obtained from the Annual Survey of Industries for Uttar Pradesh which is published annually by the Economics and Statistics Division of the State Planning Institute, Government of Uttar Pradesh.

Data was also collected from the office of the Chief Inspector of Factories, Kanpur. However, since it was not as comprehensive as that provided in the Annual Survey of Industries, the analysis was based on the ASI data.

Initially it had been decided to cover the time period 1960 to 1978. The choice of 1978 was made since there is a considerable time lag before the Annual Survey of Industries is published. It was, therefore, felt that data would not be available beyond 1978 for the purpose of analysis. However, the study owing to certain unavoidable reasons got unduly delayed than was anticipated. It was, therefore, felt appropriate to incorporate data for 1980-81 as well since then the study would cover a period of two full decades. Not only would the latest data be incorporated but the cut off points would also be more meaningful. 1960 could not be incorporated in our analysis since the Annual Survey of Industries was not published. Consequently, the time period of the present study is 1961 to 1980-81.

Initially, the Annual Survey of Industries was published on the calendar year basis and this was maintained by the Economics and Statistics Division upto the year 1971. After that the publication was set to the pattern of the

accounting year and this pattern is being followed since 1973-74. There was no publication of the Annual Survey of Industries for 1972-73. Our analysis has been carried out at three points of time viz. 1961, 1971 and 1980-81. Thus we have the first two sets of data on a calendar year basis while the final set of data corresponds to the financial year.

Other secondary information related to State Domestic Product from the Commodity Producing Sectors, road kilometrage per thousand square kilometers of area, electricity and agriculture etc. were obtained from different State government offices such as the Economics and Statistics Division and the Area Planning Division which are both parts of the State Planning Institute, Government of Uttar Pradesh, the State Electricity Board, the Directorate of Agriculture and related offices. The data related to banking facilities were compiled from the Reserve Bank of India Bulletins.

A small part of the analysis is also based on primary information. This has been utilised in Chapter VII where the State policy for industrial dispersal has been analysed. An industrial survey was undertaken by Dr. T.S. Papola, my supervisor, and myself to assess the impact of

the various schemes of subsidies and incentives currently being offered by the State government to promote industrial activity in Uttar Pradesh. Some of the main findings of the study have been cited in this work.

CHAPTER II

Growth and Structure of Industries in Uttar Pradesh

CHAPTER II

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The economy of Uttar Pradesh is predominantly agricultural. That, however, does not imply that the industrial sector has a less important role in the development process. A rapid and balanced development of the economy, even of a primarily agricultural one, gets handicapped by the absence of an adequately developed industrial sector due to several reasons. First, in the context of rapid growth it may be noted that while agricultural development is substantially affected by nature, industrial development is relatively free of such constraints. Second, beyond a certain level, agricultural development becomes increasingly dependent upon industrial development for supplies of inputs like agricultural machinery, fertilisers, insecticides and pesticides on the one hand, and for markets for raw materials produced in the agricultural sector, on the other. Third, agricultural development has its own limitations for solving the basic problems of poverty and unemployment, particularly of the people who do not possess the basic requirement

for agriculture, viz. land. No doubt, there exists vast potential for the growth of agricultural output per hectare of land, but investment and technology required for the realisation of this potential is likely to lead to declining rate of increase in employment per unit of output and capital in agriculture. Agricultural growth is, therefore, a necessary but not a sufficient condition for providing employment and income to the increasing number of unemployed and the landless. Fourth, rising levels of living of the people in general implies larger demand for various consumer goods produced in the non-agricultural sector. Fifth, it is seen that industrial development can be effectively used to achieve balanced regional development so as to reduce the gap between the developed and the undeveloped/underdeveloped regions.

Inadequate development of the industrial sector in Uttar Pradesh is both an indicator as well as a cause of the backwardness of the State. This does not mean that there is insufficient scope for industrial development, but for various reasons the State remains among the backward States in India. We shall now try to look at the industrial economy with a view to examine, to the extent possible, the growth and product diversification, regional distribution and the potential it has for speedy development.

Non-availability of comparable data over the time for sectors other than the organised, make it difficult to judge the growth of industrial sector as a whole. Even point-to-point comparison, on the basis of Census data is constrained by the limitation of definitional changes in the 'worker' category. We have, therefore, attempted to assess the growth and changes in the product structure in the State's industrial economy for sectors for which comparable figures are available, viz. the factory sector for which the data is provided by the Economics and Statistics Division of the State Planning Institute, Uttar Pradesh in their Annual Survey of Industries published annually.

2.1 Industrial Sector by Broad Categories

To begin with, let us look at the composition of the industrial economy of Uttar Pradesh in terms of the following broad sub-sectors :

- i. Industries based on agriculture, animal husbandry and forestry raw material;
- ii. Capital and intermediate products industries; and
- iii. Consumer goods industries, based on non-local material.

These three sub-sectors exist to a significant extent in the State.

Table 2.1 : Distribution of Factories and Employment (Percentages) by Broad Industrial Categories

Sl. No.	Sectors	Factories		Employment	
		1961	1980-81	1961	1980-81
1.	Agro-based, animal husbandry and forestry based sector	46.53	35.26	30.10	47-70
2.	Capital and intermediate goods	26.00	49.24	7.06	32.90
3.	Consumer goods not based on local raw material	27.47	15.50	53.84	19.40
	TOTAL	100.00	100.00	100.00	100.00

Over the period 1961 and 1980-81 the capital and intermediate product groups have gained significantly not only in their share in the number of units but in the share in employment as well. The share in number of units went up from just over one-fourth to almost

one half, whereas in the case of employment from a meagre 7 per cent to nearly one-third. In the case of the agro-based industries there has been a decline in the share of total units but their share in employment has gone up considerably from around 30 per cent in 1961 to over 47 per cent in 1980-81. However, looking at the consumer goods industries not dependent on local material, it is observed that there has been a decline in their share both in terms of units as well as employment in 1980-81 as compared to 1961 (Table 2.1).

2.2 Growth and Changes in Product Structure

During the period 1961 and 1980-81 the number of registered factories have increased at an average annual rate of around 21.03 per cent and factory employment at 14.61 per cent (simple growth). Among the important industries relatively fast growth has been registered by food products, paper and paper products, chemicals and chemical products, non-metallic mineral products, basic metals and alloys, metal products and parts, machinery and machine tools, manufacture of electrical machinery and the transport equipment manufacturing industries.

In fact some of these industry groups such as chemicals and chemical products, non-metallic mineral products and basic metals and alloys did not figure in the Annual Survey of Industries during 1961. The sugar, cotton textiles, leather and leather products and rubber and rubber products group of industries have also registered an increase in the number of units but the increase has been relatively slow. In fact, as far as employment is concerned there has been an absolute decline in employment in the cotton textiles and rubber and rubber products group of industries.

These varying growth rates among different industry groups have resulted in significant structural changes in the factory sector of the State. Taking the two most significant industries namely food products and cotton textiles which together contributed as high as three-fourth of the total employment in 1961, we find a decline in their importance and in 1980-81 they claimed only 47.7 per cent of total employment. Similarly, the top five industries — food products, cotton textiles, leather and leather products, rubber and rubber products and metal products — together accounted for only around one-half of

the total employment in 1980-81 as against 90.43 per cent in 1961. These were the industries around which industrial employment was almost totally concentrated in 1961. In fact, the percentage share of only food products registered a marginal increase from 34.73 in 1961 to 35.32 per cent in 1980-81 whereas the percentage contribution of the other four went down. In the case of cotton textiles, which registered an absolute decline in employment, the percentage crashed from 40.86 to 9.38 per cent. This was the industry group with highest employment share in 1961. Thus the food products group of industries moved up from the second to first position in 1980-81 as compared to 1961. Industry groups such as chemicals and chemical products, non-metallic mineral products and basic metals and alloys which were not present during 1961 emerged as significant industries with 3.56, 5.13 and 4.23 per cent of the total employment. Among the older industry groups electrical machinery and transport equipment manufacturing units also emerged as important with 4.80 and 3.95 per cent share in the total factory employment in the State (Table 2.2).

2.3 Spatial Structure and Product Diversification

The State has been divided into five regions viz. Western, Eastern, Central, Hill and Bundelkhand each consisting of 19, 15, 9, 8 and 5 districts in that order. The Western region is the most developed region of the State followed by the Central and the Eastern regions. Hill and Bundelkhand regions are most backward regions of the State in general and with regard to industrial development in particular. Thus we observe that the Western region not only has the most number of units and factory employment, but also the most diversified product structure followed by the Central and the Eastern regions (Table 2.3).

Before we analyse the product structure it is worth pointing out that our analysis is confined to divisions 2 and 3 of the National Industrial Classification. The Annual Survey of Industries also provides information with respect to sectors such as repairs of motor vehicles, cold storages, generation, transmission and distribution of electricity, water supply and other services. Since these are not manufacturing activities they have been clubbed together and termed as 'others'. Moreover, if

any district has less than 3 units of any particular industry group, then in order to maintain the secrecy of the units the Annual Survey of Industries does not report information under that particular group but refers to it under 'others' which clubs together all such industry groups where the number of units in a district was less than 3. We have, therefore, had no other option but to include such units also in our 'others' category.

In 1961 the product structure of the Western region primarily centred around the food products, non-metallic mineral products and the machinery and machine tool manufacturing units each having 33.76, 15.99 and 13.73 per cent share of the total registered factories in this region thereby accounting for around 63.5 per cent of the total factories. Cotton textiles and leather and leather products units accounted for another 5.17 and 5.81 per cent units. Thus nearly three-fourth of the registered factories fell in these five categories. The rest either did not exist or were very insignificant. However, by 1980-81 the Western region experienced a considerable product diversification with paper and paper products, rubber and rubber products, chemicals and chemical products

basic metals and alloys, metal products and parts group of industries also emerging as important and accounted for 23.16 per cent of the total registered factories of the region. The three most important industry groups of 1961 now had only 51.77% of the total units between them. However, the food products group of industries continued to be the single most important group and its share in total units went up marginally. This has been primarily so since the region is a major sugar cane growing region and so there has been a constant growth of the sugar and khandsari units.

Manufacturing activity in the Central region was confined to cotton textiles, leather and leather products, machine and machine tools and the transport equipment manufacturing groups of industries in 1961. These four, between them accounted for 59.25 per cent of the total units. As was the case with the Western region the Central region also saw a diversification in its manufacturing activity and the prominent industry groups to emerge significant by 1980-81 were food products, paper and paper products, rubber and rubber products, chemicals and

chemical products, basic metals and alloys and metal products and parts group of industries accounting for around 44.75 per cent of the total registered factories in the Central region. The machinery and machine tool industry, which was most important in 1961 accounting for around one-fourth of the total units, had an increase of only two units by 1980-81 and thus its share dropped down quite significantly.

The Eastern region in 1961 had only two industry groups of any significance viz. food products and textiles. Some of the industry groups to emerge as significant were paper and paper products, metal products and parts, machinery and machine tools and electrical machinery. However, although the progress may not have been very notable in the case of the Eastern region which is among the less industrially developed regions, here too units from almost all the various industry groups got established by 1980-81. This showed that there were signs of product diversification even though on a lower scale. So at least a base has been prepared on which future industrial activity can be expected to develop.

In the case of the both the Hill and the Bundelkhand regions however, the industrial base continues to be extremely weak. The Hill region is relatively better placed as compared to Bundelkhand where, by 1980-81 the two major industry groups namely food products and electrical machinery manufacturing units had come up fast accounting for slightly over one-third of the total units. Manufacture of chemicals and chemical products, manufacture of machinery and machine tools and paper and paper products were the other industries in which some units had made their appearance. Bundelkhand, even as late as 1980-81 had only 48 registered factories. The industry groups over which they were sparsely scattered being food products, paper and paper products, chemicals and chemical products, non-metallic mineral products and basic metals and alloys.

2.4 Performance of Backward Districts

As many as 42 districts of Uttar Pradesh are classified as industrially backward. Of these, Lalitpur and Kanpur (Dehat) became independent districts only recently and so they are not being included in our analysis. We have taken two major indicators of industrial activity — concentration of factories per

thousand square kilometer of area and percentage of industrial workers to total workers to see where the backward districts stand in relation to the State as a whole. For this we have taken the State average for the two indicators in 1961, 1971 and 1981 as 100 and worked out the index for each district for each year. In the State as a whole there were 3.61 factories per one thousand square kilometers of area in 1961. This figure then went up to 12.10 and 19.82 in 1971 and 1981 respectively. Similarly, while in 1961 the percentage of industrial to total workers in the State was 9 per cent it came down to 7.3 per cent in 1971 and then went up to 25.5 per cent in 1981.

Looking at concentration of factories it is found that only 3 backward districts - Moradabad, Shahjahanpur and Dehra Dun had an index of above 100 at all the three points of time (Table 2.4). Bulandshahr and Mathura had a higher index in 1971 and 1981 while Farrukhabad after having an index of above 100 in 1961 had a consistently lower index in the subsequent points of time. No other backward district had an index above the State average.

Similarly, taking the percentage of industrial workers to total workers only Bulandshahr, Mathura, Moradabad and Dehra Dun had an index above 100 at all three points of time. Azamgarh had a higher index only in 1961 and 1971 while Nainital and Garhwal in 1981. Rampur had an index of 104 in 1971. Jhansi on the other hand could not have a higher than 100 index in 1971.

These indicators thus throw some light on the limited industrial activity which is found in the backward districts.

Coming back to the growth of industries as obtained on a district-wise basis the non-backward districts were mainly the ones to have developed between 1961 and 1980-81. But even the backward districts experienced some increase in the level of industrial activity. All the backward districts taken together (23 districts which had industries located in them) had only about one-fifth of the total registered factories as well as total factory employment respectively in 1961. By 1980-81 this share had gone up to around one-fourth in the case of both total units and employment.

What is significant is that as against 23 backward districts in 1961 there were 37 backward districts which had industrial units located in them by 1980-81. Among the backward districts whose performance is noteworthy are Bulandshahr, Mathura, Moradabad, Shahjahanpur, Mainpuri, Sitapur, Unnao, Dehra Dun, Almora, Azamgarh and Jhansi. Most of these districts are the one which have shown an index higher than hundred with respect to concentration of factories and percentage of industrial workers to total workers at one or more points of time.

However, this also brings to light the fact that, by and large, only those districts have benefitted which are in proximity of non-backward districts (Table 2.5). The only district which does not have a developed district adjoining it is Jhansi. This, therefore, suggests that the promotional measures which the State government has introduced to give the necessary impetus to industrial development in the State as a whole and in the backward areas in particular have been able to induce entrepreneurs in the relatively better placed backward districts rather than those which are very remote and thus present a much more disadvantageous position from the point of view of industrial location.

2.5 Small Scale Industries

Although it has already been pointed out that comparable and time series data is only available for the registered factories in the State and so the major analysis is confined to the factory sector only. We have some data pertaining to the small scale industries for 1971 as available from the Census of India and for the same units for 1972 on the basis of a Census carried out by the Directorate of Industries, Kanpur. The data is being presented and analysed so that it could add, even though, to a limited extent in providing some picture of the industrial sector besides registered factories.

Using the Census of India data the following composition of small units emerged according to the three - fold classification followed earlier of the broad industrial categories (Table 2.6).

Table 2.6 : Distribution of Small Scale Units and Employment (Percentages) by Broad Industrial Categories (Census of India 1971)

Sl. No.	Sectors	Units	Employment
1.	Agro-based, animal husbandry and forestry based sector	45.85	49.25
2.	Capital and Intermediate goods	28.00	23.19
3.	Consumer goods not dependent on local raw material	26.15	26.56
	TOTAL	100.00	100.00

The agro-based, animal husbandry and forestry based industry group contributes about one-half of the total employment in the small scale sector, the other half being more or less equally shared by the capital and intermediate products group and non-local based consumer goods. Taking major industries within these categories, manufacture of food products is the single most important industry contributing almost one-third of employment. Other important industries contributing at least 5 per cent of employment in this sector are : manufacture of cotton textiles; textile products; wood and wooden products; and metal products.

The Census carried out by the Directorate of Industries among the registered SSI units in 1972, however, bring out a completely different picture from the one revealed by the Census of India 1971 (Table 2.7).

Table 2.7 : Distribution of SSI Units by Number & Employment (Percentages) by Broad Industrial Categories - 1972

Sl. No.	Sectors	Units	Employment
1.	Agro-based, animal husbandry and forestry based sector	18.92	15.43
2.	Capital and Intermediate goods	49.65	60.29
3.	Consumer goods not dependent on local raw material	31.43	24.27
	TOTAL	100.00	100.00

Source : Census by the Directorate of Industries, 1972.

In the registered SSI sector, capital and intermediate goods group is the most important having almost half the total number of small scale units and 60 per cent of employment. Consumer goods group based on non-local raw material occupies the second most important position with nearly one-third of the units and one-fourth of total employment. The agro-based, animal husbandry and forestry-based group has only about 19 per cent of total units and around 15 per cent of the employment.

Because of the marked difference in the data of the two sources, the product structure of registered SSI units differs markedly between the Census carried out by the Directorate of Industries in 1972 and the one revealed by the Census of India, 1971. Metal products and non-metallic mineral products were the largest industries in the 1972 Census, each claiming about 22.80 per cent of total employment. The next two largest industry groups each claiming nearly 8 per cent employment were basic metals and general machinery.

While detailed information regarding the small scale industries is not available what is known is the fact that the small scale industries have experienced a very spectacular growth specially over the last decade. In

1961 there were only 3180 registered small scale units their number had gone up to 12,848 in 1972. The growth ever-since has been very high.

Table 2.8 : Growth of Small Scale Industries in Uttar Pradesh

Years	No. of units	Estimated output (Rs. crores)	Employment
Upto 1974-75	25,766	533	3,31,701
1975-76	29,488	565	3,54,970
1976-77	33,587	637	3,81,972
1977-78	37,469	782	4,33,081
1978-79	42,035	880	4,75,180
1979-80	47,943	983	5,38,260
1980-81	55,896	1,077	6,14,200
1981-82	68,426	1,318	7,14,813
1982-83	82,037	1,581	7,75,149
1983-84	95,847	1,846	8,50,149
1984-85*	1,06,491	2,025	8,98,712

* Upto December 1984.

Source : Progress Report of the Directorate of Industries 1984-85.

The above table clearly brings out the fact that the small scale sector of the State has witnessed a very rapid growth during the 70's and 80's. The growth between 1974-75 and 1984-85 has been of the order of 313.92 per cent in terms of estimated output and 170.94 per cent with respect to employment. Since these are small units with a relatively lower scope for additional employment, the pace of growth in employment has not been as high as the growth in the number of units. However, what is encouraging to note is that output growth has been very high and has almost kept pace with the growth of units which might reflect the fact that units set up have been able to sustain their production and managed to improve their performance over the years.

In a predominantly agricultural economy it is an encouraging sign that the pace of development of the small scale units has been high since this must have definitely taken off some pressure from agriculture other-wise the increasing workforce would have had only agriculture to fall back to. The registered factories of the State had to a total employment to 7,65,994 in the year 1980-81. As against this the small scale units had a total employment of 6,14,200 (Table 2.8).

Uttar Pradesh is among the industrially backward States where as many as 42 out of the 57 districts have been declared as industrially backward. In such a situation it is not feasible nor desirable to have large scale industries in all the districts of the State. The industrialisation of the remote and backward areas can best be achieved through the development of these small scale industries. To begin with these may be units utilising local raw materials and at a later stage the modern industries can take their place. In fact, if we go by the Census of Small Scale Industries carried out by the Directorate of Industries in 1972 we might say that if trends continue to be as they were then the modern industries have already become a part of the industrial structure even in the small scale structure. Even the more conservative estimates brought out by the Census of India, 1971 show a rosy picture with nearly one-half of the units not being agro-based, animal husbandry and forestry based units.

To sum up, therefore, it may be stated that the two decades 1961 to 1980-81 have not only experienced a reasonable growth in the registered factories and in factory employment but also witnessed a favourable product diversification in three of its regions which

together account for over three-fourth of the total districts of the State.

The advent of the modern industries being set up in the State like chemicals and chemical products and the engineering goods industries, the traditional industries of the State like cotton textiles, sugar and leather and leather products do not enjoy the same status in the factory sector of the State in 1980-81 as they did two decades earlier.

The rapid growth of the small scale units too is a very encouraging sign. Here again there is some evidence to indicate that there has been product diversification and that small scale units are not confined to only the traditional type using local raw materials. The change should, therefore, be able to provide the necessary foundation on which the modern industrial sector of the State can be developed.

However, while on one hand we have a picture which shows the brighter side of the fruits of industrial development where considerable growth in industrial activity both in terms of increase in number of factories

and factory employment are evident along with a reasonable product diversification there is, on the other hand, some apprehension that much may not have been achieved as far as the goal of reducing inter-regional disparities in the levels of industrial development is concerned. The following chapter shall, therefore, address itself to this issue.

Table 2.2 : Major Industries in Uttar Pradesh (Registered Factories 1961 and 1980-81)

Industry Description	Ind. Code	No. of Units		Employment			
		1961	1980-81	1961	%	1980-81	%
1	2	3	4	5	6	7	8
Manufacture of food products	20-21	350	1575	67830	34.73	270537	35.32
Manufacture of beverages & tobacco products	22	16	50	1490	0.76	6823	0.89
Manufacture of cotton textiles	23	121	180	79810	40.86	71872	9.38
Manufacture of wool, silk & synthetic textiles	24	-	64	-	-	8475	1.11
Manufacture of jute, hemp & mesta textile	25	-	9	-	-	6787	0.89
Manufacture of textile products	26	-	62	-	-	4672	0.61
Manufacture of wood & wood products	27	-	36	-	-	2326	0.30
Manufacture of paper & paper products	28	25	304	3690	1.89	18916	2.47
Manufacture of leather & leather products	29	76	116	8010	4.10	9806	1.28
Manufacture of rubber & rubber products	30	115	162	13930	7.13	7766	1.01
Manufacture of chemicals & chemical products	31	-	307	-	-	27263	3.56
Manufacture of non-metallic mineral products	32	-	483	-	-	39307	5.13

Contd.../-

Table 2.2 (Contd....)

1	2	3	4	5	6	7	8
Basic metals & alloys industries	33	-	470	-	-	32384	4.23
Manufacture of metal products and parts (except machinery)	34	180	394	7040	3.61	13719	1.79
Manufacture of machinery, machine tools (except electric machinery)	35	36	368	4580	2.35	17030	2.22
Manufacture of electrical machinery	36	27	220	1820	0.93	36786	4.80
Manufacture of transport equipment	37	4	143	50	0.03	30295	3.95
Other manufacturing industries	38	-	96	-	-	4069	0.53
Others (besides division 2 & 3)		114	501	7060	3.61	157161	20.52
TOTAL (All Industries)		1064	5540	195310	100.00	765994	100.0

Source : Annual Survey of Industries, Uttar Pradesh, 1961 and 1980-81.

Table 2.3 : Region-wise Distribution of Major Industries in Uttar Pradesh (1961 and 1980-81)

Industry Description	Western Region		Eastern Region	
	1961	1980-81	1961	1980-81
	1	2	3	4
0				
Manufacture of food products	209 (33.76)	1165 (34.17)	22 (14.10)	110 (15.41)
Manufacture of Beverages & tobacco products	3	-	-	-
Manufacture of cotton textiles	32 (5.17)	76 (2.22)	38 (24.20)	21 (2.94)
Manufacture of wool, silk & synthetic textiles	-	7	-	20 (2.80)
Manufacture of jute, hemp & mesta textiles	-	-	-	-
Manufacture of textile products	-	5	-	20 (2.80)
Manufacture of wood & wooden products	3	6	-	-
Manufacture of paper & paper products	-	108 (3.17)	-	61 (8.54)

Contd.../-

Table 2.3 (Contd....)

	0	1	2	3	4
Manufacture of leather & leather products		36 (5.81)	52 (1.53)	-	-
Manufacture of rubber & rubber products		-	84 (2.46)	--	10
Manufacture of chemicals & chemical products		-	98 (2.87)	-	17
Manufacture of non-metallic mineral products		99 (15.99)	381 (11.18)	5	17
Basic metals & alloys industries		-	293 (8.59)	-	14
Manufacture of metal products & parts (except machinery)		-	207 (6.07)	-	29 (4.06)
Manufacture of machinery & machine tools (except electrical machinery)		85 (13.73)	219 (6.42)	9	29 (4.06)
Manufacture of electrical machinery		9	62 (1.82)	4	37 (5.18)
Manufacture of transport equipment		4	45 (1.32)	5	13
Other manufacturing industries		4	34 (1.00)	-	4
Other (Besides divisions 2 & 3)		135	567	74	322
TOTAL (All Industries)		619	3409	157	714

51

51

Contd.../-

Table 2.3 (Contd....)

	Central Region		Hill Region		Bundelkhand	
	1961	1980-81	1961	1980-81	1961	1980-81
0	1	2	3	4	5	6
Manufacture of food products	3	127 (10.73)	3	33 (17.84)	-	3
Manufacture of beverages & tobacco products	-	8	-	-	-	-
Manufacture of cotton textiles	26 (10.70)	30 (2.53)	-	-	-	-
Manufacture of wool, silk & synthetic textiles	-	-	-	-	-	-
Manufacture of jute, hemp & mesta textiles	-	-	-	-	-	-
Manufacture of textile produ- cts	-	4	-	-	-	-
Manufacture of wood & wooden products	-	-	-	-	-	-
Manufacture of paper & paper products	4	74 (6.25)	-	3	-	4
Manufacture of leather & leather products	29 (11.93)	56 (4.73)	-	-	-	-

Contd.../-

Table 2.3 (Contd.....)

	0	1	2	3	4	5	6
Manufacture of rubber & rubber products	-	-	41 (3.46)	-	-	-	-
Manufacture of chemicals & chemical products	-	-	81 (6.84)	-	10 (5.40)	-	3
Manufacture of non-metallic mineral products	-	-	4	-	-	-	9 (18.75)
Basic metals & alloys industries	-	-	115 (9.71)	-	-	-	6 (12.50)
Manufacture of metal products & parts (except machinery)	-	-	92 (7.77)	-	-	-	-
Manufacture of machinery & machine tools (except electric machinery)	61 (25.10)	-	63 (5.32)	4	5	-	-
Manufacture of electrical machinery	11 (2.79)	-	33 (2.79)	-	33 (17.84)	-	-
Manufacture of transport equipment	28 (11.52)	-	64 (5.41)	-	-	-	-
Other manufacturing industries	-	-	23	-	5	-	-
Others (Besides divisions 2 & 3)	81	-	369	17	96	4	23
TOTAL (All Industries)	243	-	1184	24	185	4	48

Source : Annual Survey of Industries, Uttar Pradesh - 1961 and 1980-81.

Table 2.4 : Index of the Concentration of Factories and Industrial Workers for the Backward Districts

Sl. No.	Backward districts	Concentration of factories per '000 sq.km. of area			Percentage of Industrial workers to total workers		
		1961	1971	1981	1961	1971	1981
0	1	2	3	4	5	6	7
1.	Budaun	22.33	26.93	15.41	54.44	43.84	53.69
2.	Bulandshahr	39.61	102.01	113.55	135.55	115.07	117.96
3.	Etah	12.47	24.12	20.30	83.33	69.86	70.63
4.	Etawah	12.74	90.69	67.53	71.11	69.86	83.41
5.	Farrukhabad	133.79	69.66	46.01	87.77	91.78	85.14
6.	Mainpuri	32.41	68.23	62.38	91.11	71.23	72.86
7.	Mathura	36.57	123.90	115.73	102.22	104.11	129.55
8.	Moradabad	121.05	167.51	199.47	131.11	135.62	118.75
9.	Pilibhit	15.79	15.86	25.82	88.88	68.49	75.29
10.	Rampur	81.72	73.27	78.59	97.77	104.11	99.98
11.	Shahjahanpur	163.16	116.47	103.35	75.55	67.12	74.82
12.	Barabanki	31.30	12.89	15.67	83.33	78.08	52.75
13.	Fatehpur	13.30	27.01	42.24	75.55	60.27	63.61
14.	Hardoi	4.71	9.58	12.43	61.11	47.95	50.12
15.	Rae Bareli	6.09	62.69	26.57	57.77	49.32	59.50
16.	Sitapur	29.08	40.39	29.60	62.22	60.27	54.12
17.	Unnao	36.29	51.13	67.59	60.00	68.49	60.31
18.	Azamgarh	38.50	44.60	41.66	123.33	119.18	83.84

Contd.../-

Table 2.4 (Contd....)

0	1	2	3	4	5	6	7
19. Bahraich	12.19	34.61	16.21	44.44	27.40	38.10	
20. Ballia	26.04	10.49	5.00	126.66	80.82	74.50	
21. Basti	34.07	11.32	13.97	46.66	50.68	48.08	
22. Deoria	82.00	33.87	22.22	46.66	45.21	63.25	
23. Faizabad	37.67	32.13	29.44	91.11	90.41	75.14	
24. Ghazipur	24.65	7.43	9.46	96.66	84.93	85.10	
25. Gonda	30.19	25.06	16.63	44.44	41.10	40.94	
26. Jaunpur	47.92	33.21	17.11	82.22	80.82	80.98	
27. Pratapgarh	7.48	9.00	4.30	65.55	58.90	53.06	
28. Sultanpur	12.47	7.43	4.78	72.22	53.42	51.73	
29. Banda	Negligible	5.20	2.76	66.66	53.42	55.76	
30. Hamirpur	3.88	1.16	1.49	89.99	61.64	71.10	
31. Jalaun	6.09	5.37	2.34	66.66	63.01	83.02	
32. Jhansi	11.08	28.41	40.17	104.04	93.15	153.57	
33. Almora	1.94	5.70	10.84	23.33	26.03	98.70	
34. Pithoragarh	N.A.	N.A.	1.22	41.11	35.62	83.30	
35. Dehra Dun	107.76	173.54	160.04	142.22	127.40	251.45	
36. Garhwal	1.94	3.39	10.73	29.99	20.55	108.75	
37. Chamoli	N.A.	N.A.	N.A.	52.22	27.40	73.50	
38. Nainital	49.03	43.86	46.92	95.55	98.63	142.00	
39. Tehri Garhwal	N.A.	3.30	6.00	28.88	21.92	57.30	
40. Uttar Kashi	N.A.	N.A.	1.97	38.88	24.66	81.25	
State	100.00 (3.61)	100.00 (12.10)	100.00 (18.82)	100.00 (9.00)	100.00 (7.30)	100.00 (25.50)	

Table 2.5 : Location of Backward Districts Claiming a Higher Share of the New Units Set up Between 1961 and 1980-81

Sl. No.	Backward Districts	% of New units claimed	The adjoining non-backward districts
1.	Moradabad	4.44	Meerut, Bareilly, Bijnore
2.	Dehra Dun	1.84	Saharanpur, Bijnore
3.	Bulandshahr	1.77	Meerut, Ghaziabad
4.	Mathura	1.75	Agra, Aligarh
5.	Shahjahanpur	1.23	Bareilly, Kheri
6.	Unnao	1.14	Kanpur, Lucknow
7.	Nainital	1.08	Bareilly, Bijnore
8.	Azamgarh	0.83	Gorakhpur, Varanasi
9.	Mainpuri	0.83	Agra
10.	Jhansi	0.83	
11.	Sitapur	0.68	Lucknow, Kheri
	Total share of these 11 districts	16.80	
12.	Share of remaining backward districts	7.41	
13.	Share of non-backward districts	75.79	
	TOTAL	100.00	

CHAPTER III

Inter-Regional and Inter-District Disparities in Industrial Activity

CHAPTER III

Inter-Regional and Inter-District Disparities in Industrial Activity (1961, 1971 and 1980-81)

We shall, in this Chapter, make an effort to trace the development of registered factories on a regionwise basis from 1961 to 1980-81. For this we have taken total units, size of employment and output at three points of time viz. 1961, 1971 and 1980-81. This will give us some idea of the industrial development and also of the inter-regional disparities in the growth of registered manufacturing units of the state. The data, on which our analysis is based, has been taken from the Annual Survey of Industries, Uttar Pradesh. It is brought out on an annual basis by the Economics and Statistics Division of the State Planning Institute, Uttar Pradesh Government (Table 3.1).

In 1961 the state had a total of 1,064 registered factories out of which the Western region alone accounted for around 58 per cent. The Central region had almost another one-fourth (22.84 per cent) and so these two regions, between them, had four-fifths of the total registered factories in the state. Bundelkhand region was at the bottom and had a total of 4 registered factories

only. The Hill region had another 24 units. These two regions, therefore, had less than 3 per cent of the total registered factories. Although the Eastern region had around 14.75 per cent of the total units, it's share was low considering the fact that the region is very big and comprises of over one-fourth of the total districts of Uttar Pradesh.

By 1971, the total number of registered factories had gone up to 3,649 in the state as a whole. Although the shares of the Western and Central regions had gone down marginally to 56.43 and 22.18 per cent respectively, they together continued to account for over three-fourths of the total registered factories of the state. The remaining three regions had a marginal increase in their share of registered factories. In terms of absolute numbers the Eastern region had a big jump from 157 units in 1961 to 596 units in 1971. There was, similarly, an increase from 24 to 112 units in the case of the Hill region as well. Bundelkhand, however, continued to be a region with a low industrial base.

In 1980-81 the number of registered factories in the state was 5,540. This increase between 1971 and 1980-81 was concentrated mainly in the Western region which now

had a total of 3,409 units and its share to total units had gone up to 61.53 per cent as compared to around 56.5 per cent in 1971. The percentage share of the Central region (21.37 per cent) remained almost at par with the percentage obtained in 1971 although there was a very slight decline in the percentage in 1980-81. The increase in the share of the Western region was reflected in a 4 per cent decline in the share of the Eastern region whose share came down from 16.33 per cent in 1971 to 12.89 per cent in 1980-81. Bundelkhand, which continued to be at the bottom, also had a marginal decline. The Hill region, however, registered an increase in its share of registered units.

We, therefore, observe that between 1961 and 1980-81, whereas there was a substantial increase in the total number of units in the state as a whole as well as in the different regions, with the sole exception of Bundelkhand, yet the regional picture remained more or less unaltered. The share of the Western region registered an increasing trend and along with the Central region continued to account for over four-fifths of the total units in the state in 1980-81 as well as was the case in 1961. Thus it is apparent that the extent of disparities at the

regional/^{level}have actually gone up between 1961 and 1980-81. Disparities also exist at the intra-regional levels. In the Western region, which comprises of 19 districts, there were 3 districts having less than three registered factories and another 5 districts where the total number of registered factories was below 10 per district in 1961. On the other hand Agra, Meerut, and Muzaffarnagar with 175, 111 and 98 units each, in that order, were those districts which had a sizeable industrial base and these three districts together accounted for 62 per cent of the total registered factories of the Western region. In the case of the Central region Kanpur was the only district having a well developed industrial sector (153 units). Lucknow with 48 and Kheri with 25 units were the only other districts with some industrial activity. The remaining districts of the region had either very few or no units at all. Kanpur alone accounted for nearly 63 per cent of the total units in Central region and with Lucknow included the percentage was nearly 84.

The Eastern region, comprising of 15 districts, had only 4 districts which had between 10-25 registered units. Varanasi with 44 units emerged as the most developed as far as the number of registered units was concerned. Similarly, in the 12 districts which form Bundelkhand and

Hill regions only Jhansi in Bundelkhand and Dehra Dun and Naini Tal in the Hill region had registered factories in excess of three units. The remaining 9 districts either had less than 3 units each or no unit at all.

By 1971 the districts of the Western region had made reasonable progress with as many as 7 districts having over 100 units each while another 4 districts had over 50 units each. Only Pilibhit (7 units), Etah (13 units) and Budaun (17 units) were the districts in Western region having less than 20 units each. By 1980-81, 9 districts of the Western region had over 100 units each. In fact, except Bareilly (106 units), all districts had over 200 units each and Agra headed the districts with 626 registered factories not only in the region but in the state as a whole as well, and was followed by Ghaziabad (555 units) and ranked third in the state. In 1980-81 only 4 districts of this region had less than 50 units each.

In the case of the Central region Kanpur and Lucknow continued to have a very high number of registered factories and had 508 and 188 units respectively in 1971 and 611 and 389 units respectively in 1980-81. These two districts, therefore, together accounted for 86.25 and 82.17 per cent of the total units of the Central region in 1971 and 1980-81 respectively. Unnao with 58 units in 1980-81 was

the only other district from the Central region having a sizeable number of registered factories. Thus intra-regional disparities have persisted in this region between 1961 and 1980-81.

As far as the Eastern region is concerned only Varanasi, Allahabad and to a certain extent Gorakhpur have experienced a relatively fast growth of the registered factories. While the number of units jumped up considerably from 24 in 1961 to 163 in 1971 in the case of Allahabad, it, however, had only a marginal increase by 1980-81 (176 units). Varanasi likewise had a big increase from 44 to 171 units between 1961 and 1971 but then the increase was relatively slow and by 1980-81 it had a total of 206 units. Even as late as 1980-81 districts like Ballia, Ghazipur, Pratapgarh and Sultanpur from the Eastern region had less than 10 units each. The three top districts namely Varanasi, Allahabad and Gorakhpur between them accounted for 66.78 and 67.11 per cent of the total registered factories in the Eastern region in 1971 and 1980-81 respectively. It is evident, therefore, that very high intra-regional disparities continue to exist.

Bundelkhand and the Hill regions have not made much progress in the growth of registered factories. In 1971 and 1980-81 Bundelkhand had only 43 and 48 registered

factories and of these Jhansi alone accounted for 35 and 42 respectively. Similarly, Dehra Dun and Naini Tal continue to have a major share of the total units existing in the Hill region. The extent of their domination is being brought out by the fact that in 1971 these two districts had 92.86 per cent of the total units of the Hill region. By 1980-81 this percentage had come down significantly but was still very high (82.70 per cent).

Similarly, inter-district variations in number of registered factories is very high. We have, on the one hand, districts like Agra, Kanpur and Ghaziabad each having over 550 registered factories while district like Hamirpur, Jalaun, Lalitpur, Pratapgarh and Chamoli having less than 3 units each even in 1980-81. As a result of these disparities both inter and intra-regional disparities have persisted even after three decades of development planning. If anything, the disparities have actually widened over these years.

3.1 Employment Generation over Time

The registered factories of the state provided employment to 1,77,740 persons in 1961. Although the

Western region had around 58 per cent of the total units, they provided employment to only 39.93 per cent of the total workers employed in the registered factories of the state. Central region, on the other hand, employed 40.56 per cent of these workers in only 22.84 per cent units. This was primarily because the 26 cotton textile mills of Kanpur alone accounted for an employment of over 50,000 workers. Thus out of the 72,000 workers engaged in the various units of the Central region a single industry of Kanpur accounted for over two-thirds of the total employment. While average employment per unit in the state as a whole was 167 workers, that in the Central region was nearly 300. The Eastern region having around 15 per cent of the total units gave employment to around 16 per cent workers engaged in the registered manufacturing sector of the state. In the Bundelkhand and Hill regions this percentage was 0.05 and 2.01 respectively and was more or less in conformity with the low percentage of total units within these regions.

The increase in employment in 1971 was commensurate with the increase in the number of units during this period. Thus, while units went up from 1,064 in 1961 to 3,649 in 1971, employment also shot up from around 1.78

lakhs workers to 3.36 lakhs workers. Although the share of the Western region in terms of total units went down slightly, its share in employment registered an increase and stood at 43.40 per cent in 1971. There was, however, a substantial drop in the share of workers employed in the registered factories of the Central region. While total units went up from 243 in 1961 to 807 in 1971 employment went up from around 72 thousand to about 92 thousand only. It is interesting to note that whereas the number of textile units of Kanpur increased from 26 to 40 during this period the employment, even in absolute numbers had a shortfall of around 17 thousand. Therefore, while this industry had accounted for over two-thirds of the total employment of the region as a whole in 1961, by 1971 this percentage had come down to as low as 18.5 per cent only. The shares of the Eastern, Bundelkhand and Hill regions all had a marginal increase in 1971 over 1961.

The increasing trend in the total number of units as seen between 1961 and 1971 was maintained even after 1971 such that in 1980-81 the state had a total of over 5,500 registered factories. Employment, similarly, also increased considerably from 3.36 lakhs workers to 6.08 lakhs workers during this period. The Western region further increased its share in total employment by about 1.5 per cent (44.98 per cent in 1980-81). It should, however, be noted that

during this period its share in total units had also gone up considerably and the Western region accounted for 61.53 per cent of the total registered factories in the state as a whole. There was a considerable increase in the share of employment of the Central region from 27.41 per cent in 1971 to 34.61 per cent in 1980-81. Even then, this percentage was lower than that obtained in 1961 (40.56 per cent). Although Kanpur had fewer textile units in 1980-81 (30 units) as compared to 1971 (40 units) there was an over two fold increase in the employment figures (38 thousand in 1980-81). However, the increase in the share of this region as a whole is primarily because of a very high employment in the electricity generating and distributing units which are accounted for in the total units of Lucknow. The share of the three remaining regions had a marginal decline as compared to 1971 even though these percentages were higher than those obtained in 1961.

We, therefore, find that with the exception of 1961 when the Central region was employing the maximum number of workers, it is the Western region which has been holding the first rank as far as employment generation in the registered factories is concerned. But then it also has a very big share of the total registered factories in the state as well. Whereas there was an over four fold increase

in the number of registered factories between 1961 and 1980-81, total employment went up around 2.5 times only. Both the Western and Hill regions had a growth rate of employment higher than the state average while that of the Central region was lower. The Eastern region maintained a growth rate around the state average. Although Bundelkhand region shows the highest growth rate this is primarily because total employment (80 workers) was extremely low in 1961 and, as compared, the figures of employment in 1980-81 (8160 workers) obviously is extremely high yielding a very high figure of growth.

Average employment per unit in the state was 167, 92 and 110 respectively at the three points of time. Both the Western and Hill regions had an average employment less than the state average at all three points of time. The remaining regions had higher per unit employment than the state average. The single exception being Bundelkhand in 1961 when average employment per unit was extremely low since total employment in the region as a whole was only 80 workers.

3.2 Levels of Output

The total value of output produced by the registered

factories in the state was Rs.197.15 crores in 1961 and out of this around 39 per cent was the contribution of the Western region while the Central region accounted for another 34 per cent. These two regions, having 81 per cent units and 78.5 per cent of total workers together accounted for around 73.5 per cent of the total output. The Eastern region accounted for another 19.5 per cent. The contributions of Bundelkhand and Hill regions was rather low since they had very few units.

By 1971 the value of total output had gone up at a very rapid pace to touch Rs.1,039.15 crores. Although there had been a relative decline in the share of the Western region as far as number of units is concerned, yet its share in total output went up considerably from 39.32 per cent to 48.5 per cent. The Central region, on the other hand experienced a sharp decline in its share of total output which stood at 23.12 per cent in 1971. This was so inspite of a very big increase in the total output of the region which registered an increase from Rs.67.53 crores in 1961 to Rs.240.26 crores in 1971. Even the Eastern region had a marginal decline in its share of total output. The remaining two regions had a marginal increase in their respective shares of output.

The next decade also witnessed a very high increase in the value of total output which, in 1980-81, stood at Rs.3,749.33 crores. Thus, while during this period the number of units had increased by about 52 per cent the increase in output was around 280 per cent. Even the employment had gone up by only 81 per cent during the same period. The Western region not only continued to dominate in the share of total output, its share increased even beyond the percentage obtained in 1971. Thus in 1980-81 it was contributing over 51 per cent of the total value of output. The remaining regions, except for the Eastern, also had a marginal increase in their respective shares.

Looking at the three points of time together we find that the Western, Bundelkhand and Hill regions had an increasing trend in their share to total value of output. The Eastern region had a declining trend even though the decline was marginal. The Central region, however, had a decline in 1971 over 1961 but an increase in the subsequent decade. Even then its percentage share in 1980-81 (26.66 per cent) was considerably below its share of 1961 (34.26 per cent).

It is, therefore, quite obvious that however we may look at the manufacturing sector considerable disparities

exist on a regional level. Since the Western region is way ahead of the others in terms of total units it is automatically ahead in value of output as well. This is amply reflected by the fact that its contribution is over one-half of total output and 61 per cent as far as total units in 1980-81 are concerned. At the bottom we have Bundelkhand and the Hill regions which taken together account for less than 5 per cent of the units as well as total output. Although these disparities are partly present because the Western region is the biggest in size covering as many as 19 districts but then even the two least developed regions (Bundelkhand and Hill) together have no less than 13 districts. The Eastern region, likewise, has 15 districts but only around 12 per cent of the total units and contributes only around 17 per cent to total value of output.

Intra-regional disparities are also very high and so even within the region we have districts which are highly developed as far as registered factories are concerned while other districts have a very poor industrial base. The most striking example is that of the Central region which is placed second after Western region in total units, employment and output generation. However, the manufacturing units are centred around Kanpur and Lucknow alone while

the performance of the remaining 7 districts is rather poor.

In order to find out whether the level of disparities had gone up or gone down the co-efficient of variation was calculated for 1961, 1971 and 1981 taking total number of factories districtwise and the districtwise factory employment. The results obtained are as follows:

Table 3.2 : Table Showing Extent of Disparities

Year	Coefficient of Variation	
	Number of Units	Factory Employment
1961	142.54	208.51
1971	150.69	161.60
1980-81	143.67	165.44

It is, therefore, evident from the figures given above that if we consider the growth of units in the factory sector then the inter-district disparities increased between 1961 and 1971 but have since been reduced. However over the period 1961 and 1980-81 there has not been much change. In fact the inter-district disparities have gone up to a certain extent.

On the other hand, if we look at the question of

inter-district disparities from the point of view of factory employment it is observed that the level of disparities were considerably reduced between 1961 and 1971. Between 1971 and 1980-81 they have gone up marginally. However, over the entire period of the study the disparities have come down substantially.

While districts with a less diversified structure have only a few industries which could be considered their industrial base, even the districts with relatively diversified structure cannot claim to have all the industries, in which factories are located in their district, as their industrial base. In a general sense, the industrial base of a region is defined in terms of industries in which a district has relatively higher level of activity. This aspect can be examined with the help of location quotients. Location quotient for an industry in a district is defined as:

$$l_{ij} = \frac{e_{ij}}{E_j} \bigg/ \frac{E_i}{E} ; \text{ where}$$

e_{ij} = employment in the i^{th} industry in j^{th} district
 E_j = employment in all industries in the j^{th} district
 E_i = employment in the i^{th} industry in the state, and
 E = employment in all industries in the state.

Industries with $lij > 1$ in any district are supposed to constitute the industrial base of that district²⁶.

The industries which constitute the industrial base of a district on the basis of location quotients are being given below (figures in brackets are the value of the location quotient):

Table 3.3 : Industrial base of districts in Uttar Pradesh (1980-81).

S.No.	Districts	Industries with $lij > 1$
1.	Agra	Leather and Leather Products (6.59), Non-Metallic Mineral Products (13.75), Basic Metals and Alloys (3.08), Machinery and Machine Tools (1.91).
2.	Aligarh	Paper and Paper Products (5.97), Non-Metallic Mineral Products (3.62), Metal Products and Parts (8.83), Basic Metals and Alloys (1.57).
3.	Bareilly	Machinery and Machine Tools (2.62).
4.	Bijnor	Food Products (3.30).
5.	Buland Shahr	Non-Metallic Mineral Products (1.85), Basic Metals and Alloys (1.85).

²⁶Papola T.S. - 'Spatial Diversification of Manufacturing Industries', in Studies on Development of Uttar Pradesh - Giri Institute of Development Studies, Occasional Papers Vol.1, p.187.

Table 3.3 (Contd....)

S.No.	Districts	Industries with $lij > 1$
6.	Etah	Metal Products and Parts (2.17).
7.	Etawah	Food Products (1.78), Chemicals (3.26), Metal Products (1.38).
8.	Ghaziabad	Cotton Textiles (2.88), Textile Products (2.94), Paper and Paper Products (1.35), Rubber and Rubber Products (3.37), Chemicals and Chemical Products (1.92), Basic Metals and Alloys (4.33), Metal Products and Parts (3.73), Machinery and Machine Tools (4.90), Electrical Machinery (2.86).
9.	Mainpuri	Non-Metallic Mineral Products (9.53).
10.	Mathura	Non-Metallic Mineral Products (1.42), Basic Metals and Alloys (2.33), Metal Products and Parts (6.29), Machinery and Machine Tools (3.32).
11.	Meerut	Food Products (2.28), Cotton Textiles (1.02), Rubber and Rubber Products (13.97).
12.	Moradabad	Food Products (2.03), Paper and Paper Products (1.63), Metal Products and Parts (2.80).
13.	Muzaffarnagar	Food Products (3.18).
14.	Pilibhit	Food Products (3.44).
15.	Rampur	Chemicals and Chemical Products (1.95).
16.	Saharanpur	Food Products (1.66), Paper and Paper Products (3.22), Rubber and Rubber Products (1.29), Basic Metals and Alloys (1.42), Electrical Machinery (7.31).

Table 3.3 (Contd....)

Sl.No.	Districts	Industries with $lij > 1$
17.	Shahjahanpur	Food Products (2.60).
18.	Kanpur	Cotton Textiles (5.38), Leather and Leather Products (7.90), Chemicals and Chemical Products (2.36), Basic Metals and Alloys (1.39), Metal Products and Parts (1.73), Machinery and Machine Tools (2.05), Transport Equipment (1.00).
19.	Fatehpur	Food Products (1.91).
20.	Lucknow	Paper and Paper Products (1.30).
21.	Unnao	Leather and Leather Products (14.00), Basic Metals and Alloys (7.72).
22.	Rae Bareli	Electrical Machinery (15.69).
23.	Sitapur	Food Products (2.61).
24.	Kheri	Food Products (3.42).
25.	Allahabad	Paper and Paper Products (7.45), Basic Metals and Alloys (2.22), Electrical Machinery (6.67).
26.	Gonda	Food Products (3.11).
27.	Deoria	Food Products (3.39).
28.	Basti	Food Products (2.86).
29.	Gorakhpur	Food Products (1.43), Paper and Paper Products (1.86), Chemicals and Chemical Products (3.98).
30.	Mirzapur	Textile Products (11.69), Machinery and Machine Tools (1.49).

Table 3.3 (Contd....)

Sl.No.	Districts	Industries with $lij > 1$
31.	Varanasi	Wool, Silk and Synthetic Textiles (5.34), Textile Products (16.58), Paper and Paper Products (1.49), Machinery and Machine Tools (2.23), Electrical Machinery (1.53).
32.	Jhansi	Chemicals and Chemical Products (1.48), Basic Metals and Alloys (1.62).
33.	Naini Tal	Food Products (2.54).
34.	Pauri Garhwal	Food Products (1.37).
35.	Dehra Dun	Paper and Paper Products (5.20), Chemicals and Chemical Products (14.53), Electrical Machinery (3.13).

It must not be presumed from Table 3.3 that industries not mentioned in it do not exist in that district. Nor does it imply that those are the largest industries of that district. A higher than one location quotient merely implies that the industry has a higher proportion in the districts industrial employment than it has in that of the state. A large number of industries with higher than one location quotient do not necessarily imply anything desirable or undesirable for a district. In fact, many districts with a highly diversified structure may not show a high location quotient even though they may contribute

Varanasi and Mirzapur on the other hand specialize in textile products and machinery and machine tools. Paper and paper products and electrical machinery could be developed in Allahabad and Varanasi.

Among the districts of the Central region, Kanpur has a strong textile based cluster and another based on leather goods. Chemical, metal and machinery industries also exist but are still to develop properly. Fatehpur, Sitapur and Kheri can be developed in the food products group of industries. Like Kanpur, Unnao too has a strong leather based cluster. Rae Bareilly has a strong cluster of electrical manufacturing units.

Western region, which is the most developed, has a food products cluster in Etawah, Bijnor, Moradabad, Shahjahanpur, Pilibhit, Saharanpur, Muzaffarnagar and Meerut. The non-metallic mineral products groups are present in Aligarh, Mathura, Agra and Mainpuri. Metal products and machinery clusters are found in Aligarh, Mathura, Agra, Etah, Etawah, Bareilly, Moradabad and Ghaziabad.

There is, therefore, the need to adopt a scientific and planned approach for the development of the districts and regions. The trends in industrial growth clearly

significantly to employment. A higher than one location quotient might imply some locational advantage. Thus from the policy view point it may be better to give greater emphasis to these industries, at least initially, if industrial development is to be accelerated. This will particularly be helpful in case of districts where a selective approach is to be adopted.

It will be more fruitful if the industries constituting the industrial base are inter-linked. Then the industrial development will be more appropriate and meaningful.

Among the Hill districts the developed clusters are food products in Naini Tal and Pauri Garhwal. While Dehra Dun has the chemical and electrical machinery units. One can therefore think in terms of developing the food processing, forest based and chemical products group of industries.

Jhansi is the only district from Bundelkhand having chemical products and basic metal industries with a higher than one location quotient. These could be developed better.

Two prominent clusters can be seen in the case of the Eastern region. Gorakhpur, Gonda, Deoria and Basti have an advantage in the case of the food products industries.

This is one of the reasons why even a very high value of total output from manufacturing is a relatively small percentage of the total output from the commodity producing sectors. The other three regions all have a lower percentage share of manufacturing sector to total output from commodity producing sectors than the state average at all three points of time. While this percentage is only marginally low in the case of the Eastern region, it is considerably low in the case of both Bundelkhand and the Hill regions.

If we look at the contribution of the manufacturing sector on a districtwise basis we observe that five districts figure in the list of top 10 districts of 1960-61, 1970-71 and 1980-81. The top 10 districts are those whose percentage contribution of the manufacturing sector to the output from commodity producing sectors exceeds 20 per cent. Of these Lucknow was ranked at the top in 1960-61 but it then slipped to the second place in 1970-71 and 1980-81. Kanpur was ranked 2nd, 3rd and 4th respectively at the three points of time. Varanasi, which was 4th ranked in 1960-61 moved to the top spot in 1970-71 but then was relegated to the third position in 1980-81. Agra, after being ranked 9th in 1960-61 moved up to 7th position in 1970-71 and retained its

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indicate that the state has the potential for industrial development. It is a question of giving industrial development a thrust in the proper direction.

3.3 Share of the Manufacturing Sector to the State Economy

The overall lack of development of the industrial sector can also be seen from the fact that the share of the manufacturing sector to total output from the commodity producing sectors has increased from 11.5 per cent in 1960-61 to only 18.5 per cent in 1980-81. This increase can in no way be considered high and, therefore, reflects on the secondary role being played by the manufacturing sector (Table 3.4).

In 1960-61 only the Central region had a percentage share higher than the state average and the region maintained this trend both in 1970-71 and 1980-81. The other region which had a higher share than the state average in 1970-71 and 1980-81 is the Western region. However, it must be kept in mind that while the Western region has the highest share among regions in both total units and output from registered factories, the region also has a highly developed agricultural sector as well and so the per worker as well as per hectare productivity in agriculture is much higher as compared to the other regions.

rank in 1980-81 as well. Saharanpur is the fifth district to figure in all three lists.

Meerut, after having been among the top ten in both 1960-61 and 1970-71 is deleted from the list in 1980-81. This is primarily because Ghaziabad, which was a part of Meerut district was given the status of an independent district in 1976. As Ghaziabad is the most industrially developed districts, Meerut was the obvious sufferer while Ghaziabad itself was the top ranked district in 1980-81 with a contribution of 59.9 per cent by the manufacturing sector to the total output from commodity producing sectors.

Another exceptional case is that of Dehra Dun which figured in the list of top 10 in both 1960-61 and 1980-81. However, in 1970-71 it is placed in the list of the bottom 10 districts since the registered manufacturing sector had suffered an absolute loss during 1970-71.

Gorakhpur and Muzaffarnagar made their exit from the list of top ten districts after a maiden appearance in 1960-61. We have, on the other hand, Bareilly, Allahabad and Jhansi which figure in the lists of both 1970-71 and 1980-81 but not ranked in 1960-61. Mirzapur provides the single instance of a district appearing in the list of top 10 districts in 1970-71 but neither in 1960-61 nor 1980-81. Thus, looking at the list of the top ten districts

at the three points of time we observe only a few changes in the list of districts even though their rankings may have changed.

Relatively more changes are found in the case of the bottom 10 districts. These are districts whose percentage contribution of the manufacturing sector to the output from the commodity producing sectors is 5 per cent or below. In fact there are only 3 districts which appear in all three lists, viz. Budaun, Jalaun and Garhwal and Chamoli (jointly since for 1960-61 and 1970-71 their contribution is given as a combined percentage, for 1980-81 their contribution is given individually). As many as five districts which comprise the list of the bottom 10 districts in 1960-61 improved their positions relatively and did not appear in the two subsequent lists. These districts are Etah, Farrukhabad, Pilibhit, Mainpuri and Sultanpur. All except Sultanpur are from the Western region. Hamirpur and Dehra Dun make a single appearance in 1970-71 only. Dehra Dun thus has the dubious distinction of being among the bottom 10 districts although it was placed among the top ten in 1960-61 as well as 1980-81. Hardoi, Gonda and Ballia appear among the bottom ten districts for the first time in 1980-81.

We, therefore, find wide variations between the districts when their percentage contribution of the manufacturing sector to the total output from the commodity producing sectors is considered. In 1960-61 we have Lucknow at the top with a contribution of 36.4 per cent and Etawah at the bottom with a meagre contribution of 1.5 per cent only. In 1970-71 the top district, Varanasi contributed 39.8 per cent while the minimum contribution was from the districts of Tehri Garhwal and Uttarkashi (0.9 per cent). By 1980-81 the difference between the top ranked district (59.9 per cent) and the bottom district Jalaun (2.9 per cent) had widened further. In between the top and last ranked districts the rankings of the other districts has also kept changing at the three different points of time, but what is more significant is that over the years disparities seem to have widened somewhat as can be seen by the difference between the top and bottom districts between 1960-61 and 1980-81. However, whereas there were only six districts having a contribution of over 20 per cent from manufacturing to the total output from the commodity producing sectors in 1960-61, their number had gone up to 14 by 1980-81. Interestingly enough, in the group with a percentage contribution of 5 per cent and below also there was an increase in the number of districts from 11 in 1960-61 to 14 in 1980-81.

**Table 3.1 : Inter-Regional Picture of Registered Factories in Uttar Pradesh
1961, 1971 and 1980-81**

Regions	No. of Factories			No. of Workers			Total Output (Rs.Lakhs)		
	1961	1971	1980-81	1961	1971	1980-81	1961	1971	1980-81
1. Western Region	619 (58.18)	2059 (56.43)	3409 (61.53)	67630 (38.06)	145678 (43.40)	273336 (44.98)	7752.2 (39.32)	50370.09 (48.48)	192513.79 (51.34)
2. Central Retion	243 (22.84)	807 (22.11)	1184 (21.37)	72080 (40.56)	92032 (27.41)	210371 (34.61)	6753.5 (34.26)	24026.95 (23.12)	99955.34 (26.66)
3. Eastern Region	157 (14.75)	596 (16.33)	714 (12.89)	28600 (16.08)	60746 (18.10)	99739 (16.41)	3851.8 (19.54)	19320.18 (18.59)	64774.14 (17.28)
4. Bundelkhand	4 (0.38)	43 (1.18)	48 (0.87)	80 (0.05)	6183 (1.84)	8160 (1.34)	2.2 (0.01)	586.27 (0.56)	4935.25 (1.32)
5. Hill Region	24 (2.25)	112 (3.07)	185 (3.34)	3580 (2.01)	9286 (2.77)	16151 (2.66)	495.4 (2.51)	3062.14 (2.95)	12754.45 (3.40)
6. Others*	17 (1.60)	32 (0.88)	- (-)	5570 (3.24)	21751 (6.48)	- (-)	859.9 (4.36)	6549.52 (6.30)	- (-)
State	1064 (100.00)	3649 (100.00)	5540 (100.00)	177740 (100.00)	335676 (100.00)	607757 (100.00)	19715.0 (100.00)	103915.15 (100.00)	374932.97 (100.00)

* In 1961 'Others' gives an aggregate picture of all those districts which individually had less than 3 units each. In 1971 however 'Others' primarily pertains to those electricity generating and distributing units for whom districtwise information is not available. 1980-81 has no such classification.

Source : Annual Survey of Industries 1961, 1971 and 1980-81 of Uttar Pradesh.
Economics and Statistics Division of the State Planning Institute.

Table 3.4 : Districtwise Percentage Share of the Manufacturing Sector (Registered and Non-Registered) to the Total Output From the Commodity Producing Sectors 1960-61, 1970-71, 1980-81.

District	% Share of Manufacturing to Total Output		
	1960-61	1970-71	1980-81
Agra	15.2	23.4	30.4
Aligarh	13.7	11.2	21.9
Bareilly	9.9	24.7	26.0
Bijnor	15.3	14.1	14.2
Budayun	3.6	2.3	3.4
Bulandshahr	7.9	9.8	16.0
Etah	6.2	10.0	10.5
Etawah	1.5	4.6	10.6
Farrukhabad	1.8	5.2	6.5
Mainpuri	5.0	11.4	19.0
Mathura	7.9	6.6	16.0
Meerut	22.2	35.5	25.8
Ghaziabad	-	-	59.9
Moradabad	10.7	10.1	12.2
Muzaffarnagar	14.8	13.4	9.4
Pilibhit	3.7	6.1	6.7
Rampur	12.7	8.3	14.4
Saharanpur	19.1	19.6	34.6
Shahjahanpur	4.2	4.0	4.8
Western Region	11.4	14.7	21.0

Table 3.4 (Contd....)

District	% Share of Manufacturing to Total Output		
	1960-61	1970-71	1980-81
Barabanki	11.0	10.9	14.0
Fatehpur	10.7	4.6	6.5
Hardoi	6.0	6.3	3.2
Kanpur	36.1	37.3	38.0
Kheri	8.4	6.6	4.8
Lucknow	36.4	38.3	52.9
Rae Bareli	7.1	4.9	23.2
Sitapur	10.6	9.7	9.0
Unnao	2.2	4.0	15.0
Central Region	15.9	15.1	20.9
Allahabad	11.8	18.5	30.0
Azamgarh	5.8	7.4	16.2
Bahraich	7.5	2.2	3.0
Ballia	13.7	6.4	4.5
Basti	10.7	6.6	7.0
Deoria	8.9	8.8	8.9
Faizabad	6.4	9.9	12.4
Ghazipur	6.8	9.6	12.3
Gonda	9.2	5.6	4.3
Gorakhpur	20.0	10.4	14.3
Mirzapur	8.3	32.6	25.2
Pratapgarh	8.2	4.8	14.4
Sultanpur	4.9	8.3	4.8
Varanasi	21.5	39.8	43.6
Jaunpur	9.2	6.1	4.7
Eastern Region	10.6	12.8	16.4

Table 3.4 (Contd....)

District	% Share of Manufacturing to Total Output		
	1960-61	1970-71	1980-81
Banda	5.1	5.1	5.3
Hamirpur	7.0	3.6	9.5
Jalaun	4.4	2.3	2.9
Jhansi	10.0	14.9	29.8
Lalitpur	-	-	9.6
Bundelkhand Region	6.7	6.9	11.1
Almora X	6.0	2.3	5.7
Pithoragarh X			5.2
Dehra Dun	20.3	3.2	36.8
Garhwal X	4.3	2.4	3.2
Chamoli X			4.4
Naini Tal	7.6	8.8	9.9
Tehri Garhwal X	7.1	0.9	3.0
Uttar Kashi X			4.2
Hill Region	7.6	4.7	10.1
Uttar Pradesh	11.5	13.2	18.5

Note : In 1960-61 and 1970-71 the figures in case of some Hill districts have been given jointly.

Source : District Domestic Output (Commodity Producing Sector)
Economics and Statistics Division of the State
Planning Institute.

1961, 1971 and 1980-81

State/Region	No. of Factories			Fixed Capital			Working Capital		
	1961	1971	1980-81	1961	1971	1980-81	1961	1971	1980-81
1. Western Region	619 (58.18)	2059 (56.43)	3409 (61.53)	2300.3 (43.24)	25496.31 (23.85)	48641.40 (16.10)	2096.0 (39.93)	11937.41 (41.23)	34544.98 (34.17)
2. Central Region	243 (22.84)	807 (22.11)	1217 (21.97)	1629.6 (30.64)	9168.73 (8.58)	225287.69 (74.56)	1761.2 (33.55)	4195.23 (14.49)	41352.00 (40.90)
3. Eastern Region	157 (14.75)	596 (16.33)	681 (12.29)	887.0 (16.68)	8780.60 (8.21)	19467.37 (6.44)	940.2 (17.91)	5791.93 (20.01)	20662.05 (20.44)
4. Bundelkhand	4 (0.38)	43 (1.18)	48 (0.87)	0.9 (0.02)	280.22 (0.26)	2723.99 (0.90)	1.2 (0.02)	300.55 (1.04)	1809.33 (1.79)
5. Hill Region	24 (2.25)	112 (3.07)	185 (3.34)	229.2 (4.31)	2686.11 (2.51)	6029.84 (2.00)	257.0 (4.90)	1015.11 (3.51)	2735.52 (2.70)
6. Others*	17 (1.60)	32 (0.88)	- (-)	271.9 (5.11)	60499.59 (56.59)	- (-)	193.6 (3.69)	5711.01 (19.72)	- (-)
7. State Total	1064 (100.00)	3649 (100.00)	5540 (100.00)	5318.9 (100.00)	106911.63 (100.00)	302150.29 (100.00)	5249.2 (100.00)	28951.24 (100.00)	101103.88 (100.00)

Table 3.5 (Contd....)

State/Region	No. of Workers			Total Output		Value added/Worker		
	1961	1971	1980-81	1961	1971	1980-81	1961	1971 1980-81
1. Western Region	67630 (38.06)	145678 (43.40)	273336 (44.98)	7752.2 (39.32)	50370.09 (48.48)	192513.79 (51.34)	2457	6290 11787 1049 2180 3279
2. Central Region	72080 (40.56)	92032 (27.41)	210371 (34.61)	6753.5 (34.26)	24026.95 (23.12)	99955.34 (26.66)	2490	5020 8853 1232 2560 6610
3. Eastern Region	28600 (16.80)	60746 (18.10)	99739 (16.41)	3851.8 (19.54)	19320.18 (18.59)	64774.14 (17.28)	2291	7280 13361 1120 2526 4453
4. Bundelkhand	80 (0.05)	6183 (1.84)	8160 (1.34)	2.2 (0.01)	586.27 (0.56)	4935.25 (1.32)	1375	3352 14319 875 2462 6975
5. Hill Region	3580 (2.01)	9286 (2.77)	16151 (2.66)	495.4 (2.51)	3062.14 (2.95)	12754.45 (3.40)	2011	3887 17827 1123 2889 4958
6. Others*	5770 (3.24)	21751 (6.48)	-	859.9 (4.36)	6549.52 (6.30)	-	2330	9719 - 1316 3104 -
7. State Total	177740 (100.00)	335676 (100.00)	607757 (100.00)	19715.0 (100.00)	103915.15 (100.00)	374932.97 (100.90)	2427	6223 11571 1143 2432 4719

* In 1961 'Others' is the aggregate picture of all those districts which individually had less than 3 units each. In the case of 1971, however, 'Others' primarily pertains to those electricity producing and distributing units for which districtwise information is not available. 29 out of the 32 units fall in this category. 1980-81 has no such classification.

Source : Annual Survey of Industries for Uttar Pradesh, 1961, 1971 and 1980-81.

CHAPTER IV

Variations in the Industrial Activity of the Districts

CHAPTER IV

Variations in the Industrial Activity of the Districts

In the preceding chapter we had analysed the inter-district disparities between the districts over the period of study and indicated the trends observed therein. Our attempt, in this chapter, will be to look into the variations of industrial activity across the regions between 1961, 1971 and 1980-81. In the initial period (1961) only 37 districts of the state had a share in the manufacturing activity in the state. Our analysis will be confined mainly to these districts. Those districts which came in the industrial scene in 1971 and 1980-81 will be talked about separately. However, till 1971 Ghaziabad remained a part of Meerut district before getting an independent status of its own in 1976. We have therefore for our convenience clubbed it with Meerut for our analysis for 1980-81.

4.1 Employment Growth Between 1961-1971

The employment level of the registered factories showed an increase of 105.39 per cent in the state as a whole. We have grouped the districts on the basis of

Table 4.1 : High and Low Category Districts
According to Growth of Employ-
ment (1961-1971)

State Average = 105.39%	
High Growth	Low Growth
Aligarh	Agra
Bareilly	Budayun
Bijnore	Rampur
Bulandshahr	Shahjahanpur
Farrukhabad	Barabanki
Mathura	Kanpur
Meerut	Kheri
Faizabad	Sitapur
Saharanpur	Bahraich
Lucknow	Basti
Unnao	Deoria
Allahabad	Gonda
Azamgarh	Jaunpur
Ballia	Naini Tal
Ghazipur	
Gorakhpur	
Varanasi	
Jhansi	
Dehra Dun	
Mainpuri	
Moradabad	
Mirzapur	
Muzaffarnagar	
23 Districts	14 Districts

their individual growth into high and low categories. High category districts are those where employment growth was relatively much higher than that of the state and similarly low category districts are those who experienced a much lower growth in their employment as compared to the state average (Table 4.1). The medium category comprises of those few districts whose average is around the state average. Out of the 37 districts 23 had an average growth higher than the state average. However not all were those where industrial activity was necessarily high. In fact districts like Bulandshahr, Mathura, Azamgarh, Ballia, Ghazipur and Jhansi, because of their very low initial employment, registered a growth rate which is quite flattering. In fact these districts put together had accounted for just around 0.55 per cent of the total factory employment in 1961. Even in 1971 their combined share was only around 3.75 per cent. In fact Aligarh, Bareilly, Bijnore, Meerut, Saharanpur, Lucknow, Allahabad, Gorakhpur and Varanasi are the districts which registered a high growth on a reasonably high initial employment level. All the districts mentioned above had at least one per cent share in the total employment individually in 1961 and together accounted for slightly over one-fourth of the total employment. Their hold on factory employment got further consolidated and so in 1971 they

together had nearly 44 per cent of the total factory employment in the state.

In the low category there were a total of 14 districts. Of these Deoria, Barabanki, Rampur and Basti were districts which had experienced an absolute decline in their employment during this period. The shortfall was considerable in the case of Deoria and Barabanki but only marginal in the other two districts. Kanpur, which has always been a prominent district of the state when one talks of industrial activity, was in the category of low growth districts registering an increase of only 13.47 per cent in its factory employment during this decade. One of the main factor responsible for this is that there was an absolute decline in employment in the cotton textile industry of the district and the decline was quite substantial (31.5 per cent). Muzaffarnagar was another relatively industrialised district which did not keep pace with the state in employment generation. Agra was yet another of the industrialised districts which had a lower employment growth but only very marginally. Thus the low category districts were mainly those that do not boast of having a sound industrial base whereas in the high growth category we have a mixed bag comprising of industrialised and industrially backward districts.

4.2 Employment Growth Between 1971-1980-81

Industrial employment in the state went up by nearly 91 per cent during the next decade. There was not much change in the total number of districts in the high and low categories (Table 4.2). There were however shifts between the districts and as a result some districts which in the previous decade had a higher than average employment growth now found themselves in the low category and vice versa. Those which got shifted from high to low category were Aligarh, Bareilly, Meerut, Allahabad, Gorakhpur and Varanasi from among the important districts. On the other hand, Muzaffarnagar was among the industrially better off districts to perform well and had an employment growth twice that of the state as a whole and had a nearly 5 per cent share in the total industrial employment of the state. The districts to maintain their position in the high group even during this period were Bijnore, Bulandshahr, Farrukhabad, Mathura, Lucknow, Faizabad, Moradabad, etc. numbering 11 in all. Of these as many as 9 are backward districts. Although some of them even in 1980-81 did not have a very high absolute level of employment it is still encouraging to note that in these backward districts industrial employment has kept ahead of the state average. It seems that the promotional

Table 4.2 : High and Low Category Districts
by Employment Growth (1971-1980-81)

State Average = 90.95%	
High Growth	Low Growth
Bijnore	Aligarh
Budayun	Bareilly
Bulandshahr	Agra
Mathura	Mainpuri
Moradabad	Meerut
Muzaffarnagar	Kanpur
Rampur	Sitapur
Barabanki	Allahabad
Kheri	Bahraich
Lucknow	Gorakhpur
Ballia	Varanasi
Basti	Jhansi
Deoria	Dehra Dun
Faizabad	Saharanpur
Ghaziabad	Unnao
Gonda	Jaunpur
Mirzapur	
Naini Tal	
Shahjahanpur	
Azamgarh	
Farrukhabad	
21 Districts	16 Districts

policies of the government have been successful to some degree and so it is essential to ensure that their position gets further consolidated if the goal of balanced regional development is to be achieved. However, most of these districts are those which have a developed district in their proximity and so our earlier observation, that new industries are going to such of those backward districts which are close to a developed district, seems to get further strength.

Agra and Kanpur from among the industrially advanced districts once again failed to maintain their rate of growth. In Kanpur the growth was only one per cent. One wonders whether the district has reached its point of saturation.

During the period 1971 to 1980-81 we, therefore, find a mix of developed and backward districts not only in the high category but also in the low category.

4.3 Employment Growth Over the Entire Period

Taking the entire period under the study together we have in all 24 districts where employment growth was higher than 292.19 per cent, which was the state average. Six out of these 24 districts, of course, are those which

had a very poor level of employment to begin with. Eight districts, on the other hand, are those where there was reasonable industrial activity even in 1961 (Table 4.3).

Out of the 13 districts, having lesser employment growth than the state average, 4 are industrially developed ones. Needless to say, the worst offender among them is Kanpur whose employment growth was not even 15 per cent.

Having seen the variations in employment growth over the three time periods what emerges is that there are 11 districts which always had a higher growth than the state average. These, therefore, qualify for the high growth category. Another 13 districts had a higher than average employment growth during two out of the three time periods. These are being categorised in the medium growth category (Table 4.4). We are thus left with those districts which were either always having a lower growth than the state (4 districts) or a lower growth during two out of the three time periods. These constitute the low growth category.

in 1971, 11 new districts, besides the 37 indicated earlier, also had industrial units. All these are back-

Table 4.3 : High and Low Category Districts
by Employment Growth (1961-1980-81)

State Average = 292.13%	
High Growth	Low Growth
Bareilly	Agra
Bijnore	Aligarh
Bulandshahr	Mainpuri
Farrukhabad	Rampur
Mathura	Kanpur
Meerut	Kheri
Moradabad	Sitapur
Muzaffarnagar	Bahraich
Saharanpur	Basti
Shahjahanpur	Deoria
Lucknow	Gorakhpur
Unnao	Jaunpur
Allahabad	Budayun
Azamgarh	
Ballia	
Faizabad	
Ghazipur	
Gonda	
Mirzapur	
Varanasi	
Jhansi	
Dehra Dun	
Naini Tal	
Barabanki	
24 Districts	13 Districts

Table 4.4 : Categorisation of Districts
According to Employment Growth

High Growth	Medium Growth	Low Growth
Azamgarh	Allahabad	Agra
Ballia	Barabanki	Aligarh
Bijnore	Bareilly	Bahraich
Bulandshahr	Dehra Dun	Basti
Faizabad	Gonda	Budayun
Farrukhabad	Jhansi	Deoria
Ghazipur	Meerut	Gorakhpur
Lucknow	Muzaffarnagar	Jaunpur
Mathura	Naini Tal	Kanpur
Mirzapur	Saharanpur	Kheri
Moradabad	Shahjahanpur	Mainpuri
	Unnao	Rampur
	Varanasi	Sitapur
11 Districts	13 Districts	13 Districts

ward districts. Their performance by way of employment growth was better than the state average in the case of five districts only. In fact, Jalaun, which had three industrial units in 1971 had none in 1980-81. Another three districts viz. Rae Bareli, Tehri Garhwal and Uttar

Kashi got added to this list in 1980-81 taking the total number of districts with at least 3 registered factories to 51 (Table 4.5).

Table 4.5 : Employment and Output Growth of Remaining Districts (1971-1980-81)

District	Employment Growth	Output Growth	
		Constant Prices (1961)	Current Prices
1. Etah	58.06	- 36.99	55.74
2. Etawah	74.26	- 36.18	50.08
3. Pilibhit	161.78	- 5.00	135.59
4. Fatehpur	177.61	168.26	504.29
5. Hardoi	225.93	- 47.46	30.56
6. Sultanpur	- 78.36	- 77.81	- 52.82
7. Pratapgarh	- 1.83	167.24	563.07
8. Banda	48.66	- 54.78	12.11
9. Almora	390.24	380.68	1097.88
10. Garhwal	293.75	168.71	566.30

Note : These are districts which had no registered factory in 1961. Jalaun also appeared in 1971, as having 3 units, had no units in 1980-81. Besides these, Rae Bareli, Tehri Garhwal and Uttar Kashi were represented for the first time in 1980-81.

In order to look into the aspect of employment growth still further we worked out correlations between the actual employment levels of the districts in 1961

with the percentage change in their employment between 1961-1971 and 1971-1980-81. The values of coefficient of correlation were negative but very low (-0.1587) between employment and growth in employment between 1961-1971 and (-0.1169) between employment and employment growth during the entire period of study i.e. 1961 to 1980-81. Although the relationship is a rather weak one, it does give an indication that some of the backward districts with an initially low employment level are the ones whose employment position has slightly improved. To the extent this is possible, the aim of the government to promote industrial activity in the backward districts seems to have met with some success.

4.4 Variations in the Growth of Output Among Districts

As was the case with employment, there were also considerable variations between districts in their rate of growth of output. The same periods have been considered for analysing the output growth for which employment growth has been worked out (Table 4.6).

During the period 1961-1971 the output of the registered factories had an over four-fold increase from around Rs.197.15 crores to Rs.1039.15 crores. The

districts were equally divided between those having higher and lower than average growth of employment. Out of the 19 districts falling in the high growth category 9 districts were the backward districts who had an insignificant contribution towards output in both 1961 and 1971. Since the value of output during 1961 was very small, increases in output have shown a very high percentage in these cases. We shall therefore put the districts in 3 categories on the basis of their output in 1961. The first category shall comprise of those districts which had a fair share in the industrial output (over two per cent each), during 1961. The second category are those whose share was around 1 per cent while the third category comprises of districts having very low output in 1961.

The first category, with over two percent share in output, has 14 districts of which 9 are non-backward according to the industrial classification of districts. Among these 14 districts only Meerut and Lucknow had a higher than average growth during 1961-1971 and 1971-1980-81 and thus over the entire period as well. Eight districts were always below the state average. The most significant among them being Kanpur which in 1961 had accounted for very nearly one-fourth of the total

industrial output arising from the factory sector in the state. It may be recalled that Kanpur had also lagged behind considerably even with respect to changes in employment. The other two districts which are non-backward, but have had a consistently lower growth are Bijnore and Gorakhpur. Three of the remaining districts namely, Muzaffarnagar, Saharanpur and Moradabad (backward) had a much lower output growth in the period 1961-71 and a higher average growth between the next ten years. Agra on the other hand showed a reverse trend with a very high output growth between 1961-71 although it lagged behind somewhat during 1971 to 1980-81.

The second category having around one per cent share in the industrial output of the state had five backward and an equal number of non-backward districts. Of these only Mirzapur has been able to keep pace with the output growth of the state over all the three periods under consideration. Shahjahanpur and Basti, on the other hand, were districts which could never keep their output growth in accordance with the state's performance. While the growth rates in Shahjahanpur were not exceptionally low, that in Basti were discouraging.

In the final category there are 13 districts, all backward with a low initial output. Since the initial

output was very low and their growth picked up over the next ten years all, with the exception of Bahraich, Budayun and Jaunpur registered a much higher output growth than that obtained in the state between 1961-1971. There were 7 districts which were able to sustain this growth over the next ten years as well. Bahraich, Badayun and Jaunpur were found lagging even in the next ten years. In fact Jaunpur had an absolute decline in its output between 1971-1980-81. Thus in the overall situation only 10 districts could have a better output growth in all the periods while the performance of 14 districts was always lower than that of the state.

So far we have looked at the output levels at the three points of time at current prices. It is well known that there have been significant changes in the price level over the years and so a more meaningful comparison between districts can be made only by adjusting the output levels to constant prices. As a result the outputs of 1971 and 1980-81 have been adjusted to constant prices of 1961. The value of output of the districts thus gets considerably reduced as there has been a steady rising trend of the prices of the manufacturing sector (Table 4.7).

As a result of this exercise it was observed in as many as 13 districts there was an absolute decline

in the level of output between one or more time periods. This phenomenon was mainly during the period 1971-1980-81 when the price rise was considerable and 11 out of the 13 districts fall in this group. Barabanki and Basti had an absolute decline between 1961-1971. Deoria and Basti were the districts with the dubious distinction of failing to attain the value of output obtained in 1961 in either 1971 or 1980-81. In the case of Jaunpur the level of output did rise between 1961-71 but subsequently fell to even below the level of 1961 in 1980-81.

To begin with output growth in the state as a whole came down from 427.09 per cent to 220.80 per cent in 1961-71 and from 260.81 per cent to 45.49 per cent only in the period 1971-1980-81. Consequently, the growth for the entire period also was brought down considerably when constant prices are taken in consideration.

Taking districts according to their share in the total output of 1961 it is seen that there is no change in the first category of districts as far as consistently high growth is concerned. Meerut and Lucknow continued to be districts with high growth for each time period.

But there were many districts which experienced negative growth of output. They were largely found to have had low growth between 1971 and 1980-81. Deoria was the district in this group always showing a negative growth. Kheri, because of its negative growth between 1971-1980-81 also had a negative growth over the entire period despite the fact that its output had shown a slight increase between 1961-71.

In the second group with districts having around one per cent of the state output, Mirzapur always showed a higher growth than the average. Four out of the 10 districts had negative growth during at least one period. Basti being the district with a negative growth throughout.

In the third category of backward districts only 3 districts had a negative growth. The output level went down marginally in the case of Budayun (7.11 per cent) and Mainpuri (2.62 per cent) but the shortfall was considerable in the case of Jaunpur between 1971 and 1980-81, the highest among all districts. In fact Jaunpur had a negative growth during this period even under current prices and so the negative growth got further compounded when price adjustments were made so

much so that even the absolute value of output in 1980-81 came down below the initial level of 1961 by less than half.

In the case of those 10 districts having industries in 1971 and 1980-81 only 4 districts showed a higher than average growth between 1971 and 1980-81, at both constant and current prices. However, while Sultanpur alone had negative growth at current prices, all the six districts having lower than average growth (under constant prices) were also found having negative growth (Table 4.5).

To conclude, therefore, variations in the industrial activity in the state, as visualised in terms of changes in levels of employment and output, bring out the fact that many of the initially better off districts have failed to sustain their performance over a period of time. Some of the backward districts, on the other hand, have had a better performance. Here, however, it must be very clearly understood that these districts which began on a low key and so improvements, in terms of percentage growth, get magnified unduly. However, to the extent that they have been able to keep pace with the rate obtained in the state is itself encouraging.

This is so because we have other backward districts such as Rampur, Sitapur, Deoria and Gonda which, despite an initial advantage in employment as well as output have failed to capitalise on it and further consolidate their position. The case of Deoria is particularly disappointing since in 1961 its share in the total employment and output of the state was 5.24 and 6.81 per cent respectively - a figure considerably high by any standards. Among the developed districts Kanpur, Bijnore, Kheri and Gorakhpur have shown a poor performance.

Table 4.6 : Districts Classified by Share in Output in 1961 and Growth in Output

Districts	Value of Output 1961 (Rs.lakhs)	Output Growth 1961 - 1971 (%)	Output Growth 1971 - 1980-81 (%)	Output Growth 1961 - 1980-81 (%)	Output Growth 1961-71	Output Growth 1971 - 1980-81	Output Growth 1961 - 1980-81
			(Current Prices)		(Constant Prices of 1961)		
1	2	3	4	5	6	7	8
A. Having Over 2% Share in Output							
Agra	573.2	857.38	223.75	2999.56	482.70	30.55	660.72
Bijnore	569.6	226.32	242.80	1018.63	98.61	38.23	174.54
Meerut	2182.9	788.77	352.24	3892.21	437.29	83.38	879.90
Moradabad (B)	470.3	237.59	331.42	1356.43	105.47	73.96	257.46
Muzaffarnagar	1246.3	121.24	274.21	727.89	34.66	50.89	103.19
Rampur (B)	516.9	89.32	143.05	360.14	15.23	- 1.99	12.93
Saharanpur	1321.6	386.79	375.06	2212.54	196.28	91.56	467.56
Kanpur	4822.1	231.38	156.82	751.06	91.98	8.80	108.87
Kheri	694.6	109.21	91.43	300.50	27.33	-22.75	- 1.71
Lucknow	416.1	857.85	992.29	10362.44	482.99	340.45	2467.78
Sitapur (B)	628.0	141.62	69.88	310.48	47.06	-31.49	0.74
Deoria (B)	1342.3	58.61	111.43	235.34	- 3.46	-14.74	-17.70
Gorakhpur	836.8	295.53	127.28	798.96	140.73	- 8.53	120.63
Gonda (B)	394.5	129.51	79.45	311.84	39.68	-27.64	1.08
B. Having Around 1% Share in Output							
Aligarh	284.8	1031.32	137.32	2584.83	588.57	- 4.30	558.90
Bareilly	337.4	1034.20	141.60	2640.57	590.32	- 2.58	572.54
Shahjahanpur (B)	129.6	357.02	205.32	1295.37	178.16	23.11	242.46
Barabanki (B)	162.4	24.57	1093.57	1386.82	-24.18	381.29	264.91
Allahabad	306.0	1319.51	233.43	4633.10	705.15	44.28	1016.64
Basti (B)	366.1	61.02	128.40	267.77	- 2.00	-7.89	- 9.75
Mirzapur	195.8	653.01	949.22	7800.77	358.31	323.09	1839.07

Table 4.6 (Contd....)

1	2	3	4	5	6	7	8
Varanasi	185.8	2463.08	196.16	7490.80	1460.00	19.42	1763.00
Dehradun (B)	169.8	1056.95	238.51	3816.43	604.17	36.50	861.21
Naini Tal (B)	325.6	216.52	423.16	1555.93	92.65	110.96	306.41
<u>C. Having a Low Share in Total Output</u>							
Budaun (B)	44.0	344.55	130.37	924.09	170.57	-7.11	151.30
Bulandshahr (B)	10.6	5363.21	497.38	32535.85	3227.92	140.68	7909.81
Farrukhabad (B)	8.6	2359.19	163.13	6370.93	1396.74	6.10	1488.14
Mainpuri (B)	37.3	2226.54	141.50	5518.50	1316.03	- 2.62	1278.95
Mathura (B)	18.7	1886.10	402.75	9885.03	1108.82	102.72	2350.59
Unnao (B)	30.3	1130.36	773.66	10649.17	648.84	252.30	2538.15
Azamgarh (B)	4.4	8143.18	297.77	32688.64	4917.04	60.40	4917.04
Bahraich (B)	98.9	208.70	187.09	786.25	87.89	15.77	117.51
Ballia (B)	0.4	2725.00	1148.23	31562.50	1620.00	403.34	8557.50
Faizabad (B)	22.1	1761.09	270.85	6801.81	1032.71	49.52	1593.89
Ghazipur (B)	1.6	27643.75	227.75	90831.25	16786.25	32.16	22216.87
Jaunpur (B)	97.1	116.68	-10.22	94.54	31.88	-63.80	-52.25
Jhansi (B)	2.2	24109.09	816.15	221690.91	14634.54	269.43	54334.09
U. P.	19715.0	427.09	260.81	1801.76	220.80	45.49	366.75

(B) = Backward Districts.

Table 4.7 : Levels of Output Districtwise at Current and Constant Prices

Districts	(Rs. Lakhs)				
	Output at Current Prices			Output Constant Prices of 1961	
	1961	1971	1980-81	1970	1980-81
Agra	573.2	5487.7	17766.7	3340.05	4360.46
Aligarh	284.8	3222.0	7646.4	1961.05	1876.65
Bareilly	337.4	3826.8	9245.7	2329.15	2269.16
Bijnore	569.6	1858.7	6371.7	1131.28	1563.80
Budayun	44.0	195.6	450.6	119.05	110.59
Bulandshahr	10.6	579.1	3459.4	352.76	849.04
Farrukhabad	8.6	211.5	556.5	128.72	136.58
Mainpuri	37.3	867.8	2095.7	528.18	514.35
Mathura	18.7	371.4	1867.2	226.05	458.26
Meerut	2182.9	19269.9	87145.9	11728.48	21390.33
Moradabad	470.3	1587.7	6849.6	966.34	1681.09
Muzaffarnagar	1246.3	2757.3	10381.0	1678.21	2532.34
Rampur	516.9	978.6	2378.5	595.62	583.75
Saharanpur	1321.6	6433.4	30562.5	3915.64	7500.92
Shahjahanpur	129.6	592.3	1808.4	360.50	443.83
Barabanki	162.4	202.3	2414.6	123.13	592.61
Kanpur	4822.1	15979.4	41038.9	9257.75	10072.13
Kheri	694.6	1453.2	2781.9	884.48	682.76
Lucknow	416.1	3985.6	43534.2	2425.81	10684.55
Sitapur	628.0	1517.4	2577.8	923.55	632.67
Unnao	30.3	372.8	3257.0	226.90	799.36
Allahabad	306.0	4343.7	14483.3	2463.76	3554.62
Azamgarh	4.4	362.7	1442.7	220.75	354.08
Bahraich	98.9	305.3	876.5	185.82	215.12
Ballia	0.4	11.3	141.05	6.88	34.63

Table 4.7 (Contd....)

Districts	Output at Current Prices			Output Constant Prices of 1961	
	1961	1971	1980-81	1970	1980-81
Basti	366.1	589.5	1346.4	358.79	330.45
Deoria	1342.3	2129.0	4501.3	1295.80	1104.75
Faizabad	22.1	411.3	1525.3	250.33	374.35
Ghazipur	1.6	443.9	1454.9	270.18	357.07
Gonda	394.5	905.4	1624.7	551.07	398.75
Gorakhpur	836.8	3509.8	7522.5	2014.49	1846.24
Jaunpur	97.1	210.4	188.9	128.06	46.36
Mirzapur	195.8	1474.4	15469.7	897.38	3796.71
Varanasi	185.8	4762.2	14103.7	2898.48	3461.46
Jhansi	2.2	532.6	4879.4	324.16	1197.55
Dehra Dun	169.8	1964.5	6650.1	1195.68	1632.13
Naini Tal	325.6	1030.6	5391.7	627.27	1323.28
U. P.	19715.0	103915.1	374932.9	63247.17	92019.36

Table 4.8 : Districtwise Growth of Employment, And Output

Districts	Employment					% Increase in Employment Between					Value of Output (Rs. Lakhs) (Current Prices)					Output at Constant Prices of 1960-61 (Rs. Lakhs)		
	1961	1971	1980-81	1961-81	1971-81	1961-71	1971-81	1961-71	1971-81	1961-71	1971-81	1961-71	1971-81	1961-71	1971-81	1971	1980-81	1971
1	2	3	4	5	6	7	8	9	10	11	12							
Agra	12540	25597	38510	207.10	104.12	50.45	573.2	5487.7	17766.7	3340.05	4360.46							
Aligarh	4100	9835	11536	181.37	139.88	17.30	284.8	3222.0	7646.4	1961.05	1876.65							
Bareilly	3460	12976	18656	439.19	275.03	43.77	337.4	3826.8	9245.7	2329.15	2269.16							
Bijnore	3960	10079	30209	662.85	154.52	199.72	569.6	1858.7	6371.7	1131.28	1563.80							
Budaun	670	1103	2597	287.61	64.63	135.45	44.0	195.6	450.6	119.05	110.59							
Bulandshahr	250	3151	6891	2656.41	1160.40	118.69	10.6	579.1	3459.4	352.76	849.04							
Farrukhabad	460	1111	2214	381.30	141.52	99.30	8.6	211.49	556.5	128.72	136.58							
Mainpuri	1790	3697	3876	116.54	106.54	4.84	37.3	867.8	2095.7	528.18	514.35							
Mathura	240	2138	4692	1855.00	790.83	119.46	18.7	371.4	1867.2	226.05	458.26							
Meerut	20330	50209	87309	329.46	146.97	73.89	2182.9	19269.9	87145.9	11728.48	21390.33							
Moradabad	3680	8145	22480	510.87	121.33	176.00	470.3	1587.7	6849.6	966.34	1681.09							
Muzaffarnagar	8370	12457	35994	330.04	48.83	188.95	1246.3	2757.3	10318.0	1678.21	2532.34							
Rampur	4370	4243	9390	114.87	- 2.91	121.31	516.9	978.6	2378.5	595.62	583.75							
Saharanpur	7950	21278	39755	400.06	171.06	86.84	1321.6	6433.4	30562.5	3915.64	7500.92							
Shahjahanpur	2040	4034	8218	302.84	97.75	103.72	129.6	592.3	1808.4	360.50	443.83							
Barabanki	1410	1084	5593	296.67	-23.12	415.96	162.4	202.3	2414.6	123.13	592.61							
Kanpur	64270	72930	73725	14.71	13.47	1.09	4822.1	15979.4	41038.9	9257.75	10072.13							
Kheri	2630	3073	8648	228.82	16.84	181.42	694.6	1453.2	2781.9	884.48	682.76							
Lucknow	5120	22842	152918	2886.68	346.13	569.46	416.1	3985.6	43534.2	2425.81	10684.55							

Table 4.8 (Contd....)

1	2	3	4	5	6	7	8	9	10	11	12
Sitapur	3130	5247	7208	130.29	67.64	37.37	628.0	1517.4	2577.8	923.55	632.67
Unnao	660	1711	3138	375.45	159.24	83.40	30.3	372.8	3257.0	226.90	799.36
Allahabad	3380	18233	24761	632.57	439.44	35.80	306.0	4343.7	14483.3	2463.76	3554.62
Azamgarh	310	1682	3541	1042.26	422.58	110.52	4.4	362.7	1442.7	220.75	354.08
Bahraich	970	1495	1765	81.96	54.12	18.06	98.9	305.3	876.5	185.82	215.12
Ballia	70	274	1487	2024.29	297.14	434.89	0.4	11.3	141.0	6.88	34.63
Basti	2640	2613	6942	162.95	- 1.02	165.67	366.1	589.5	1346.4	358.79	330.45
Deoria	10240	8250	22062	115.45	-19.43	167.42	1342.3	2129.0	4501.3	1295.80	1104.75
Faizabad	560	1299	3329	494.46	131.96	156.27	22.1	411.3	1525.3	250.33	374.35
Ghazipur	120	809	1898	1481.67	574.17	134.61	1.6	443.9	1454.9	270.18	357.07
Gonda	2750	3504	12471	353.49	27.42	255.91	394.5	905.4	1624.7	551.07	398.75
Gorakhpur	7090	17446	23138	226.35	146.06	32.63	836.8	3309.8	7522.5	2014.49	1846.24
Jaunpur	910	956	1770	94.50	5.05	85.15	97.1	210.4	188.9	128.06	46.36
Mirzapur	1920	4388	11244	485.62	128.54	156.24	195.8	1474.4	15469.7	897.38	3796.71
Varanasi	2650	13362	17424	557.51	404.23	30.40	185.8	4762.2	14103.7	2898.48	3461.46
Jhansi	90	7003	9701	10678.89	7681.11	38.55	2.2	532.6	4879.4	324.16	1197.55
Dehra Dun	1520	8675	8750	475.66	470.72	0.86	169.8	1964.5	6650.1	1195.68	1632.13
Naini Tal	2430	3173	11525	374.28	30.58	263.22	325.6	1030.6	5391.7	627.27	1323.28
U.P.	195310	401156	765994	292.19	105.39	90.95	19715.0	103915.1	374932.9	63247.17	92019.36

CHAPTER V

Inter-District Variations in the Structure of Industries

CHAPTER V

Inter-District Variations in the Structure of Industries

In an earlier chapter an attempt was made to look into the product structure of the industrial economy of the state and at the changes which have taken place over time on an inter-regional basis. Subsequently, an analysis was carried out of the inter-regional disparities as well as disparities at the inter-district level. The industrial base of the districts was seen with the help of location quotients and some indications had been given about the type of industrial clusters that could be developed around the districts and the five regions of the state.

We shall, in this chapter try to probe further into the structural variations that have taken place between the districts over the period of study with respect to changes in employment and the levels of output. For this we are taking mainly those industries which are located in at least ten districts. However, a departure has been made in the case of industry groups which have been traditionally important like the cotton

textiles. The cotton textile industries are found in less than 10 districts at all the three points of time. But this industry had been an important one since in 1961 it alone accounted for nearly 41 per cent of the total employment in the registered manufacturing sector of the state.

The uneven distribution of industrial activity among districts has its roots in the historical evolution of industries in the past. To begin with there was a high dominance, in the industrial structure, of the raw material based industries. Consequently, industries automatically got located in or around the areas where raw material was easily available. The other factor leading to such uneven distribution was the differences in the endowments of different districts. Today, however, the industrial sector is well diversified and a large part of industrial activity is not necessarily based on local raw material. Such industries do not have any particular locational advantage between one region or another in terms of availability of raw material. These are the industries which have had a faster rate of growth over the last two decades. The locational flexibility is evident from the fact that out of the 18 major industry groups, taken into our analysis, as many as 7

have units located in over ten districts. In fact the number of districts will actually be higher but then if a particular district has less than three registered factories of any industry group then information regarding them is not published on an industry-wise basis. All such units are clubbed together and information is listed in the 'other' industries category.

Thus we have the food products units located in as many as 35 districts. This, however, is a resource based industry among which sugar and khandsari units and edible oil units are the most important. Among the foot-loose type industries, we find chemicals and chemical products located in 20 districts, basic metals and alloys in 19, metal products and parts and the machinery and machine tool producing units in 18 districts each.

5.1 Pattern of Specialisation of the Districts

Before going further in the analysis of structural variations it would be worthwhile to look at the specialisation pattern of the districts. This has been attempted with the help of the coefficient of specialisation for each district. The coefficient indicates the extent to which the industrial pattern of a district is similar or different than that of the state. We have

calculated the coefficients for districts for 1961 and 1980-81 since a comparison of the two will also give an indication as to whether the industrial pattern of a district has become more diversified or concentrated over the period. The coefficient of specialisation of a district is defined as :

$$S_j = \sum_{i=1}^n \frac{e_{ij}}{E_j} - \frac{E_i}{E}$$

where e_{ij} = employment in the i^{th} industry in the j^{th} district

E_j = employment in all industries in the j^{th} district

E_i = employment in the i^{th} industry in the state,
and

E = employment in all the industries in the state.

When S_j is found to be zero, then the industrial structure is as diversified as that of the state and when it is found approximately one, the district's employment is highly scattered in only one or a few industries. Table 5.1 provides district-wise coefficients of specialisation computed for 1961 and 1980-81.

Table 5.1 : District-wise Coefficients of
Specialisation for 1961 and 1980-81

Sl. No.	District	S_j 1961	S_j 1980-81
1.	Aligarh	0.1273	0.1073
2.	Mathura	0.9638	0.2898
3.	Mainpuri	0.9637	0.3886
4.	Agra	0.4003	0.1661
5.	Etah	-	0.7427
6.	Farrukhabad	0.9638	0.5005
7.	Etawah	-	0.4862
8.	Bareilly	0.5931	0.4747
9.	Bijnore	0.6166	0.4426
10.	Budayun	0.9638	0.5257
11.	Moradabad	0.6194	0.4149
12.	Rampur	0.6166	0.5008
13.	Shahjahanpur	0.9637	0.5095
14.	Pilibhit	-	0.5256
15.	Saharanpur	0.5930	0.3261
16.	Muzaffarnagar	0.5930	0.4122
17.	Meerut	0.0668	0.1988
18.	Ghaziabad	-	0.2236
19.	Bulandshahr	0.9638	0.4046
20.	Kanpur	0.4625	0.2241
21.	Fatehpur	-	0.5257
22.	Barabanki	0.9637	0.8123
23.	Lucknow	0.8658	0.2174
24.	Unnao	0.9638	0.7361
25.	Rae Bareli	-	0.7489
26.	Sitapur	0.6166	0.5257
27.	Hardoi	-	0.8123
28.	Kheri	0.9636	0.5257

Table 5.1 (contd.)

Sl. No.	District	S_j 1961	S_j 1980-81
29.	Allahabad	0.8926	0.2984
30.	Faizabad	0.9636	0.8123
31.	Gonda	0.6203	0.5256
32.	Bahraich	0.9636	0.5257
33.	Sultanpur	-	0.8123
34.	Pratapgarh	-	0.8123
35.	Gorakhpur	0.2065	0.3634
36.	Deoria	0.9636	0.5258
37.	Basti	0.5997	0.5257
38.	Azamgarh	0.6129	0.7045
39.	Varanasi	0.5222	0.2364
40.	Mirzapur	0.5553	0.7708
41.	Jaunpur	0.5659	0.7504
42.	Ghazipur	0.9638	0.8123
43.	Ballia	0.9637	0.8123
44.	Jhansi	0.9638	0.6934
45.	Banda	-	0.5258
46.	Naini Tal	0.5932	0.5257
47.	Almora	-	0.8123
48.	Garhwal	-	0.5257
49.	Tehri Garhwal	-	0.8123
50.	Dehra Dun	0.9638	0.3794
51.	Uttar Kashi	-	0.8123

One cannot really expect each district to have as diversified an industrial structure as that of the state. But the fact that if a district has a more diversified structure there is a greater likelihood that forward and

backward linkages between them may provide the potential for the overall industrial growth, is the reason why a diversified structure is given preference. Such linkages can hardly be expected in case of districts having very few industries. Empirically also it has been found that districts with a diversified industrial structure are also the ones which have the highest level of industrial activity. In fact, this relationship is found to hold consistently across the districts in the state as is evident from a high coefficient of correlation (-0.852) between the coefficient of specialisation and number of factory workers in each district.

However, most of the districts show a highly concentrated pattern of factory employment. In 1961 out of the 37 districts which had registered factories located in them only four districts viz., Meerut, Aligarh, Gorakhpur and Kanpur had a coefficient of specialisation below 0.5. Nearly one-half of the districts (18) had an S_j of over 0.8. But then there seems to have been a definite improvement since then and by 1980-81 the districts had certainly started showing signs of diversification. As many as 13 out of the 19 districts of the Western Region have S_j less than 0.5. With the exception of Meerut and Gorakhpur all the other districts show a lower value of S_j .

in 1980-81 as compared to 1961. While Meerut and Gorakhpur seem to have developed a more concentrated structure of factory employment, the districts which have experienced a considerable degree of specialisation are Mathura, Agra, Saharanpur, Kanpur, Allahabad, Lucknow and Dehra Dun. This group of districts has at least one representative from each of the regions with the exception of Bundelkhand.

5.2 Structural Variations Among Districts

Coming back to structural variations which have taken place, we intend to take up the most prominent industry groups as already indicated earlier. The Table 5.2 gives the changes in employment and output which have taken place in these industries at the three points of time.

It is quite evident from Table 5.2 that in 1961, the industrial activity of the state was highly centered around food products and cotton textile manufacturing units each contributing 34.72 and 40.86 per cent share in total factory employment of the state and 54.62 and 29.81 per cent respectively towards the total output from all the registered factories of the state. The only other industry group of some significance was the machinery

and machine tools group whose contribution in the factory employment and output of the state was 2.35 and 2.08 per cent respectively.

The food and food products group of industries were spread over 15 districts of the state and were concentrated mainly in the Western Region. The important districts, having a share of at least 4 per cent in both total employment and output of the state in this industry group were Muzaffarnagar (11.68 and 11.23 per cent), Meerut (10.23 and 11.32 per cent), Gorakhpur (6.78 and 6.54 per cent), Saharanpur (5.79 and 8.60 per cent) and Moradabad, Sitapur and Bijnore whose share in employment and output was between 4-5 per cent respectively.

Despite the fact that the cotton textile industry figured so prominently not only with respect to total employment but total output as well, as a result of which we have included this in our analysis despite the fact that it existed in less than ten districts (9 districts), it had a very high concentration in Kanpur and Meerut. In fact, Kanpur alone accounted for 68.06 per cent share in total employment and 66.38 per cent share in total output of this industry group. Meerut, which occupied the second spot in terms of ranking had only 10.30 per

cent share in employment and 11.01 per cent share in output. The other districts, therefore, had a relatively lower level of activity related to cotton textiles since these two districts between them accounted for over three-fourth of the employment and output generated by the cotton textile units of the state.

As was the case with cotton textiles, even the machinery and machine tools units were highly concentrated in Meerut and Kanpur with the difference that here Meerut emerged as more prominent of the two although the discrepancy was not as marked between them as in the case of the cotton textiles. While Meerut accounted for 54.58 per cent share in employment and 33.72 per cent share in total output the share of Kanpur worked out to be 34.49 and 23.18 per cent respectively for employment and output. What is significant is that while these districts accounted for very nearly 90 per cent of employment, their corresponding share to total output was relatively much less (about 57 per cent) (Annexure I).

The passing away of a decade ushered in the modern industry groups in the state and so while a far greater number of districts emerged as having a role to play in the industrial activity, the share of the traditional

industries came down considerably. In fact, with product diversification there was a more even distribution of both employment and output. However, food products and cotton textiles continued to have the highest contribution to both employment (21.80 and 14.75 per cent respectively) and output (25.54 and 10.73 per cent respectively). This is so despite the fact that in the case of cotton textiles there was an absolute decline in the level of employment in 1971 as compared to 1961. This industry by 1971 got confined to 7 districts only and Kanpur along with Meerut continued to dominate, accounting for nearly three-fourth of both total employment and output. It is interesting to note that despite a substantial decline in employment from 54320 in 1961 to 37202 in 1971 in Kanpur its output (31.5 per cent) increased by around 50 per cent thereby indicating that during this period the units might have gone in for plant modernisation incorporating a better technology which may have been labour saving in nature (Annexure 2).

The food products units got very widely dispersed over the state as a whole covering as many as 32 districts. The Western Region continued to dominate this group of industries with 16 of the districts of this region having

food products units. The districts emerging as prominent in this group - those having a minimum share of 5 per cent in both total employment and output of this industry group in the state - were Bijnore (7.99 and 5.90 per cent), Saharanpur (6.51 and 5.93 per cent), Muzaffarnagar (11.37 and 7.25 per cent), Meerut (8.45 and 9.98 per cent) and Deoria (8.99 and 7.79 per cent).

The machinery and machine tool units got located in 14 districts by 1971. Its share in total employment as well as output of the state got doubled in 1971 as compared to 1961 (4.60 and 5.14 per cent). Meerut and Kanpur continued to be the most important centres of the activity. The others to emerge as significant were Agra which accounted for 9.06 per cent of the total state employment and 8.60 per cent of the state output arising from this industry group and Lucknow whose percentage share was 5.40 and 19.78 in the case of employment and output respectively. During the decade 1961-1971 the machinery and machine tool units experienced a growth of 173.25 per cent in employment and almost 6.5 fold increase in the levels of output.

The remaining industry groups are those which did not figure prominently during 1961. Of these, chemicals,

non-metallic mineral products and basic metals each had around 5 per cent of the total factory employment of the state. Chemicals (10.52 per cent) and basic metals and alloys (5.39 per cent) also had an over five per cent share in the total output of the state from the registered factories. Metal products and parts and the electrical machinery manufacturing units had a share of around 3 per cent in the factory employment and of above 2 per cent in the total output. All these new industry groups mentioned above, with the exception of non-metallic mineral products were found in ten or more districts of the state.

The chemicals industry of the state was the third largest in 1971 in terms of total value of output. It contributed 10.52 per cent to the total value of output produced by all the industries taken together. In fact its output was almost equal to that of cotton textiles, which in 1961 was the most prominent contributing nearly two-third of the factory output. By way of employment its share is only 5.30 per cent which indicates that it is among the capital intensive units of the state. Bareilly, Dehra Dun and Kanpur are the most important districts from the point of view of location of this industry and each district has a share of over 12 per cent

in the total employment in this industry in the state. In terms of output Kanpur is most important contributing over one-fifth of the total output. Bareilly with a share in output of 16.91 per cent in the next most important. The other important districts are Meerut and Varanasi.

Basic metals and alloys industries, located in 15 districts has also emerged as a significant industry group and contributes almost equally (around 5 per cent) to the total employment and output of the factory sector. Meerut has the most important base of such types of units and almost 30 per cent employment generated by this industry group and well over one-third of its total output is found here. Kanpur is the next in importance with a 15.62 per cent share in employment and 17.43 per cent share in output. Agra and Allahabad are also important districts for this industry group.

Industries manufacturing metal products and parts are primarily concentrated in the Western region of the state. Out of the 11 districts which figure in this industry group only Kanpur and Lucknow (Central Region) and Allahabad (Eastern Region) are the districts outside the Western Region. Meerut once again emerges as the most important having 21.76 per cent share of the total

employment and around 29 per cent of output. Kanpur and Aligarh are the next in importance each having a share of around 15 per cent in both employment and output. Agra and Moradabad are the other districts of some significance.

The electrical machinery manufacturing industry, however, does not have a stronghold in the Western Region since only 4 out of the 10 districts, important for this group, are from this region. The remaining districts are from the Central, Eastern and Hill Regions. Allahabad appears as the most important breaking the monopoly held by Meerut and Kanpur in the other industry groups by contributing 9.24 per cent share in employment. However, in terms of output Allahabad is second placed after Meerut. The third most important district is Lucknow whose share in employment and output is 7.76 and 10.46 per cent respectively. Dehra Dun, representing the Hill Region has a fair share (4.36 per cent) in total employment but its contribution towards output is only around one per cent.

1971, therefore, proved the turning point as far as structural developments in industry as well as spatial diversification is concerned. This healthy trend has been maintained and the different product groups being

analysed are represented by as many as 41 districts of which as many as 26 are classified backward districts (Annexure 3).

The food products group continues to be the dominant group in 1980-81 as it had been at the earlier two points of time. In fact, its relative significance has increased in terms of employment since in 1980-81 as many as 35 districts had units of this industry group under production. In 1971 its share in employment had registered a considerable decline. By 1980-81 not only had the share increased but exceeded that obtained in 1961 even though the increase is marginal (Table 5.3). There has, however, been a constant decrease in its share to total output although the change between 1971 and 1980-81 is only around 1.5 per cent. The industry group thus continues to be most significant in terms of both employment and output. There has not been much change in the relative importance of the districts. The new district to enter this group and contribute substantially towards the total output (11.27 per cent) is Ghaziabad. Saharanpur, Muzaffarnagar, Meerut, Bijnore and Deoria continued to be significant districts in 1980-81. These are the five districts which have experienced a phenomenal increase in their employment and output both between 1971 and 1980-81. Bijnore had a

Table 5.3 : Percentage Share in the Total Employment and Output of All Registered Factories by the Prominent Industry Groups

Industry Group	1961		1971		1980-81	
	Share in Employment	Share in Output	Share in Employment	Share in Output	Share in Employment	Share in Output
Food Products	34.73	54.34	23.88	25.54	35.32	24.12
Cotton Textiles	40.86	29.66	14.75	10.73	9.38	8.51
Chemicals	-	-	5.30	10.52	3.56	9.70
Non-Metallic Minerals	-	-	6.07	2.17	5.13	2.54
Basic Metals and Alloys	-	-	5.20	5.39	4.23	10.82
Metal Products and Parts	-	-	3.04	2.28	1.79	2.14
Machinery and Machine Tools	2.34	2.07	4.60	5.14	2.22	3.22
Electrical Machinery	-	-	3.62	2.92	4.80	9.84
STATE	100.00	100.00	100.00	100.00	100.00	100.00

three fold increase in employment and almost as much increase in output. Both employment and output doubled in the case of Saharanpur and Muzaffarnagar. The growth in Meerut and Deoria particularly in their outputs were of a lower order as compared to the other important districts.

While there had been an absolute decline in employment in the state in the cotton textile units between 1961 and 1971, employment picked up again in the next decade although even the level of 1980-81 could not touch that attained in 1961. Kanpur, however, continued to experience a decline in employment even during this period. In terms of output, however, Kanpur had a substantial increase even during this period of nearly 90 per cent. Ghaziabad also emerged as an important district contributing around 28.7 per cent towards the total output and 18.95 per cent share in the total employment in this industry in the state as a whole. The industry continued to have a less significant role in the industrial structure of the state both in terms of employment and output which came down to below 10 per cent in each case. At the same time this activity got reduced to only six districts of the state.

By 1980-81, 18 districts had industries producing machinery and machine tools. Although their shares in employment and output were lower as compared to 1971 the growth of output of the industry was quite significant - nearly three fold increase. Rise in employment however was of a much less order (36 per cent). Meerut, which had been the most important no longer was the leading

district with Ghaziabad getting district status and occupied the top spot with 26.66 per cent share in employment and almost the same share in the output of this industry of the state. Lucknow was another of the prominent districts which experienced a significant absolute decline in both employment and output. The other districts Agra and Kanpur did not show much by way of additional employment but both had a substantial increase in output.

In the remaining industry groups electrical machinery was the only which nearly doubled its employment between 1971-81. While there was an increase in employment in all the industry groups the increase was not very high. But in each case output growth was very high.

The chemicals group had become fairly well diversified covering 20 districts of which Ghaziabad, Kanpur, Gorakhpur and Dehra Dun were the most important together accounting for 46.44 per cent employment and slightly over half the total output of the industry as a whole.

The basic metals and alloys group of industries spread over 15 districts had a six fold increase in their total output between 1971 and 1980-81. Agra, Kanpur and Ghaziabad were the three districts having concentration of this

particular industry. Ghaziabad alone accounted for almost one-third of the total output of this industry.

Despite the fact that the non-metallic mineral product manufacturing units were spread over 13 districts, Agra alone accounted for around 58 per cent of its total employment and about 27 per cent of the output. Aligarh, Ghaziabad and Allahabad were the other important districts in this category.

Similarly, metal products and parts had a very heavy concentration in Aligarh, Ghaziabad and Kanpur and these districts between them had around 47 per cent of total employment and nearly 45 per cent of the entire output produced by this industry group.

The electrical machinery manufacturing group of industries, on the other hand were found concentrated in Saharanpur, Ghaziabad, Rae Bareilly and Allahabad. Thus, for a change we find districts other than Agra, Aligarh, Kanpur and Meerut in our list.

On the whole, therefore, it is observed that there has been a considerable dispersal of industrial activity over the districts of the state even though in terms of employment and output the industry groups are found to

have a much stronger base in the developed districts such as Kanpur, Ghaziabad, Agra, Aligarh, Muzaffarnagar, Lucknow, Varanasi, Allahabad and Gorakhpur even in 1980-81.

5.3 Productivity Levels and Capital Intensity

We have so far seen the structural changes which have taken place in the industrial sector. On the basis of the exercise it is quite evident that definite structural changes have taken place and the industrial base of the state no longer hinges around food products and cotton textiles as was the case two decades ago. Instead, the structure of the state has got fairly diversified new and modern industries have emerged significantly on the industrial picture of the state. Let us now try and analyse the productivity levels and capital intensity of these prominent industry groups. For this we are taking the standard indicators such as fixed capital per worker and productive capital per worker to explain changes in the capital intensity over the period of study. Similarly, output per worker and value added per worker are the concepts which have been used for looking into the changes in productivity levels. This exercise is being carried out for the prominent industry groups of the state for 1961, 1971 and 1980-81 (Table 5.4).

5.4 Capital Intensity and Changes in it Over the Period

The fact that the industrial base of the state was poor with low levels of investment and output is amply reflected when one looks at fixed and productive capital per worker not only for the different industries but for all industries as well as a result of the low levels of capital investment among individual industry groups.

The overall fixed capital per worker in the state was found to be Rs.2723. It was found to be highest in machine and machine tools (Rs.5046) and the food products group (Rs.4054). In the other industry groups it fluctuated around the state average except for non-metallic mineral products which had a rather low value of fixed capital per worker (Rs.526). The chemicals and basic metals and alloys group of industries were not located in the state in the initial stage. Although fixed capital per worker had gone up considerably to Rs.26651 by 1971 for all industries, the food products and machine and machine tools, which were the industry groups with a higher than average fixed capital, fell much below the state average as there was no appreciable change in their value of fixed capital per worker over the ten year period. By this time the chemical units had been set up and that

was the industry group which had the highest fixed capital worker of Rs.56578 followed by the electrical machinery producing group (Rs.48026). The remaining industry groups had a value below the state average indicating that with increases in industrial units and in employment, capital investment was of a relatively lower order.

The food products group continued to have a low level of fixed capital per worker in 1980-81. In fact the value of fixed capital per worker turned out to be the lowest among this group when compared to the others. Ironically, this was the group which had topped all industry groups in 1961. The explanation is of course simple. In 1961 the industrial sector of the state had hinged around this group. Over the years there has certainly been a very substantial increase in the units, employment and output but the majority of the units are the khandsari producing units where the levels of investment required is relatively low as compared to the modern industries. Thus chemicals (Rs.42248) and electrical machinery (Rs.39545) continued to remain the industries with the highest investment in fixed capital per worker. Another group of industries to emerge as significant was

the basic metals and alloys group where there was an almost four-fold increase in fixed capital per worker between 1971 and 1980-81 to take it to the level of the state average. As against a relatively poor performance in 1971, there was a considerably increase in the case of machinery and machine tool units in 1980-81 although its value continued to remain well below the state average.

It is interesting to note that at all three points of time the investment on fixed capital per worker was lower than the state average for the cotton textile units, which is a prominent industry group of the state. This group, as we have already pointed out, has very strong roots in Kanpur. However, most of the industries are old units where not much of modernisation has be done over the years.

An almost identical trend is observed in the case of productive capital per worker which was much above average in the case of food products and machinery and machine tools during 1961 but came down to below the state average in 1971. The explanations for the food products has already been given. In the case of machinery and machine tools the explanation probably lies in the

fact that these were relatively smaller units employing lesser capital per worker. There were however changes in the industry group between 1971 and 1980-81 such that its productive capital per worker (Rs.56247) once again exceeded the figure obtained for the state as a whole. The increase however was marginal. Chemicals and electrical machinery units were well ahead of the remaining. The chemicals units are primarily capital intensive in nature and this can be gauged by the fact that while between 1971 and 1980-81 employment level went up by only 28.26 per cent the increase in productive capital was 68.47 per cent. Basic metals and alloys industries, whose productive capital per worker was below the state average in 1971, had a higher value of this indicator than the state in 1980-81.

Thus there was a constantly increasing trend in the value of fixed and productive capital per worker in the state as a whole over the three points of time. However, considerable variations are observed among the industry groups. The traditional industries like food products and cotton textiles have been unable to keep pace with the state average whereas industry groups of a relatively later origin are the ones where relatively heavier investments seem to have gone.

Looking at the capital intensity of some of the prominent districts with respect to the major industry groups at it is observed that in the case of food products the most important districts were Saharanpur, Meerut, Muzaffarnagar and Gorakhpur in 1961. The fixed capital per worker did not increase between the period 1961-1971 only in the case of Meerut. But with respect to productive capital per worker there was a decline even in the case of Muzaffarnagar. When we compare 1961 and 1980-81 the value of fixed as well as productive capital per worker shows a decline in all the four districts.

In the case of cotton textiles however both Meerut and Kanpur, the leading districts in cotton textiles, registered higher values of fixed and productive capital per worker in each successive point of time. Kanpur and Meerut were the leading districts with respect to industries manufacturing machinery and machine tools. Both registered higher values of capital per worker between 1961 and 1980-81 although there was a marginal decline between 1971 and 1980-81.

The remaining industry groups were not prominent in 1961 so their analysis on a district-wise basis is being done for 1971 and 1980-81 only.

The chemicals group had four prominent districts Bareilly, Meerut, Kanpur and Dehra Dun in 1971. All experienced a decline in their capital per worker (fixed and productive capital) at constant prices. In the case of fixed capital per worker there was even an absolute decline.

Both fixed and productive capital generally increased in the case of units producing non-metallic mineral products. Of the three important districts Meerut, however, had an absolute decline in its capital intensity.

A declining trend in the capital intensity was also observed among the prominent districts (Agra, Muzaffarnagar, Meerut and Kanpur) where a large concentration of units manufacturing basic metal and alloy products are located.

A similar trend was also generally observed in the case of districts producing metal products and parts as well as those producing electrical machinery.

Thus, by and large, districts between 1971 and 1980-81 generally experienced a decline in their capital intensity (at constant prices) for most industry groups (Tables 5.5, 5.6 and 5.7).

5.5 Productivity Levels

Output per worker and value added per worker are reasonably good indicators of productivity of labour and labour efficiency. In 1961 the food products were the only industry group where the value of output per worker was higher than the state average. But by 1971 as many as four industry groups - food products, chemicals, basic metals and alloys and electrical machinery - had an output per worker above the state average. Machinery and machine tools group had a value almost as high as the state average. Thus a majority of the industry groups had witnessed a considerable improvement in both productivity and efficiency of labour (Table 5.4). Chemicals were the leading group with a per worker output of Rs.51445 followed by food products (Rs.38160). While all these industry groups maintained their trend in 1980-81 as well, food products from among them experienced a decline. In fact output per worker came down to Rs.33425 in 1980-81 as against Rs.38160 in 1971. This goes to show that while there has been a considerable increase in employment in this industry between 1971 (95805 persons) and 1980-81 (270537 persons), productivity of workers has come down primarily because suitable additional doses of investment were not made along with increase in employment. Chemicals, basic metals and alloys and electrical machinery were the

top three industry groups where per worker output exceeded rupees one lakh (more than thrice the state average). Cotton textiles also showed an improvement.

Value added per worker had been of a low order in 1961 and, as can be expected, food products and machinery had a value added higher than the state average. By 1971 there were three industry groups - chemicals, basic metals and alloys and electrical machinery - having a higher than average value added per worker. Machinery and machine tools were marginally below the state average. The next decade saw an even better performance and, except for food products and non-metallic mineral products, all other industry groups had a value added higher than the state average indicating an increase in the labour efficiency.

What has been said so far about capital intensity and productivity is based on current prices. Once constant prices are introduced the picture alters quite considerably. Only the industry groups non-metallic mineral products and basic metals and alloys had an increasing trend in fixed capital per worker through out the period. Food products on the other hand had a declining trend. In the case of the remaining industry groups the fixed capital per worker declined between 1971 and

1980-81 after increasing during 1961-1971. An identical situation existed in the case of productive capital per worker.

The picture was relatively better with respect to labour productivity with 5 industry groups having an increasing trend in the case of output per worker as well as value added per worker. Once again it was between 1971 and 1980-81 that productivity has declined. Moreover, the increases were only marginal.

Extending the analysis of productivity for the prominent districts of each industry group (constant prices) it is seen that productivity in the case of food products generally went up in the four prominent districts between 1961 and 1971 but then there was a considerable decline in both output per worker as well as value added per worker by 1980-81. The same is true in the case of Meerut and Kanpur which were the leading districts manufacturing cotton textiles. However there was an increase in productivity in the case of machinery and machine tool manufacturing units for which Meerut and Kanpur were again the prominent districts (Tables 5.5, 5.6 and 5.7).

Coming to the new industry groups which became

significant from 1971 onwards only Dehra Dun out of the four prominent districts manufacturing chemicals had an increase in productivity between 1971 and 1980-81. While there was a general decline in productivity in the case of districts where non-metallic minerals were being produced there was considerable increase in the productivity levels of Agra, Muzaffarnagar, Meerut and Kanpur, the districts important for the industry group basic metals and alloys. The same trend was also observed with respect to the metal products and parts manufacturing units which were mainly concentrated in Aligarh, Agra, Meerut and Kanpur. Out of the three prominent districts manufacturing electrical equipment only Lucknow had a higher productivity in 1980-81 as compared to 1971. Productivity in Meerut and Allahabad declined. Thus there were various districts where the levels of productivity went up particularly in the case of the new industry groups.

To sum up, therefore, while some of the exercises carried out indicate quite clearly that the industrial structure had undergone a significant change as is evident from the low values of coefficient of specialisation in the case of larger number of districts in 1980-81. Thus we can say that the industrial sector of the state has

got diversified. Even capital intensity and labour productivity generally increased between 1961 and 1971. However, the levels of capital intensity and productivity could not be maintained in many districts and industry groups between 1971 and 1980-81.

Table 5.2 : Employment and Output in the Prominent Industry Groups
Of Uttar Pradesh (1961, 1971 and 1980-81)

Industry Group	(Output in Rs. lakhs)					
	1961		1971		1980-81	
	Employ- ment	Output	Employ- ment	Output	Employ- ment	Output
Food Products	67830	10769.30	95805	26537.01	270537	90428.26
Cotton Textiles	79810	5877.70	59170	11151.67	71872	31916.53
Chemicals	-	-	21256	10935.14	27263	36370.39
Non-metallic Minerals	-	-	24359	2257.40	39307	9560.76
Basic Metals and Alloys	-	-	20869	5598.99	32384	40601.50
Metal Products and Parts	-	-	12190	2369.25	13719	8010.05
Machinery and Machine Tools	4580	409.90	12515	3030.35	17030	12084.84
Electrical Machinery	-	-	18445	5336.68	36786	36906.28
State Total (All Industry)	195310	19715.00	401156	103915.15	765994	374932.97

Table 5.4 : Productivity Levels and Capital Intensity 1961, 1971 and 1980-81 For Selected Industry Groups

Industry Groups	Fixed Capital per Worker		Productive Capital per Worker		Output per Worker		Value added per Worker	
	1961	1971 1980-81	1961	1971 1980-81	1961	1971 1980-81	1961	1971 1980-81
Food Products	4054 (7253)	5071 (2506)	7764 (14083)	22400 (5027)	15877 (28566)	38160 (12991)	3250 (5895)	4045 (2163)
Cotton Textiles	2059 (3734)	14409 (4621)	3614 (6555)	19682 (8854)	7365 (13359)	18847 (17259)	2092 (3795)	3973 (5004)
Chemicals	-	56578 (16420)	-	72129 (36822)	-	51445 (51848)	-	14704 (13424)
Non-Metallic Minerals	526 (954)	2428 (2901)	1208 (2191)	5263 (5922)	3268 (5928)	9267 (9453)	1204 (2184)	2878 (1758)
Basic Metals and Alloys	-	8652 (13352)	-	15857 (26236)	-	26829 (48727)	-	6871 (8566)
Metal Products and Parts	2398 (4350)	4662 (3329)	4344 (7979)	11225 (8435)	5791 (10504)	19436 (6250)	1870 (3392)	4807 (5176)
Machine and Machine Tools	5046 (9153)	6162 (9047)	7827 (14197)	13798 (21860)	8950 (16234)	24214 (27579)	3115 (5650)	6175 (8176)
Electrical Machinery	2066 (3747)	48026 (15369)	4863 (8821)	71614 (42925)	7467 (13544)	28933 (38993)	2284 (4143)	8308 (13188)
All Industries	2723 (4939)	26651 (15331)	5411 (9815)	37244 (21498)	10094 (18039)	25904 (19023)	2427 (4402)	6223 (4497)

Note : Figures in brackets are the value adjusted at constant prices of 1970-71.

Table 5.5 : Capital Intensity and Productivity of the Prominent Districts for the Important Industry Groups (1961)

Industry Groups	Fixed Capital per Worker (Rs.)	Productive Capital per Worker (Rs.)	Output per Worker (Rs.)	Value Added per Worker (Rs.)
1	2	3	4	5
<u>FOOD PRODUCTS</u>				
Saharanpur	5290 (9590)	15590 (28279)	23552 (42721)	5606 (10169)
Meerut	4614 (8369)	7539 (13675)	17566 (31863)	3369 (6111)
Muzaffarnagar	3578 (6490)	9059 (16432)	15270 (27698)	3252 (5899)
Gorakhpur	2300 (4172)	5959 (10809)	15351 (27845)	3539 (6419)
<u>COTTON TEXTILES</u>				
Meerut	2918 (5293)	3360 (6095)	7876 (14286)	2012 (3650)
Kanpur	1968 (3570)	3578 (6490)	7183 (13029)	2263 (4015)
<u>MACHINERY AND MACHINE TOOLS</u>				
Meerut	2056 (3729)	3824 (6936)	5528 (10027)	1654 (3000)
Kanpur	4057 (7359)	5380 (9759)	6013 (10907)	2050 (3718)

Note: Figures in brackets are the values at constant prices of 1970-71

Table 5.6 : Capital Intensity and Productivity of the Prominent Districts for the Important Industry Groups (1971)

Industry Groups	Fixed Capital per Worker (Rs.)	Productive Capital per Worker (Rs.)	Output Per Worker (Rs.)	Value Added per Worker (Rs.)
1	2	3	4	5
<u>FOOD PRODUCTS</u>				
Saharanpur	11182	27060	27588	3870
Meerut	4949	42927	93038	6621
Muzaffarnagar	7273	9555	19243	1296
Gorakhpur	6095	17002	26175	4488
Bijnore	7229	16445	23732	4705
Deoria	9645	24194	26272	5425
<u>COTTON TEXTILES</u>				
Meerut	9893	75326	25339	6103
Kanpur	5840	6981	15833	3573
<u>MACHINERY AND MACHINE TOOLS</u>				
Meerut	5219	13120	18026	4581
Kanpur	7110	12254	16215	4577
Agra	3739	8768	22980	4713
Lucknow	7785	33819	88707	14535
<u>CHEMICALS</u>				
Bareilly	49381	53450	71993	26135
Meerut	12652	24634	60423	10347
Kanpur	110849	128324	64947	8733
Dehra Dun	45823	82479	28414	2492

Table 5.6 (Contd....)

1	2	3	4	5
<u>NON-METALLIC MINERAL PRODUCTS</u>				
Agra	455	1565	5770	2071
Meerut	4872	18256	36381	13552
Allahabad	1670	3332	8820	3161
<u>BASIC METALS AND ALLOYS</u>				
Agra	5388	13218	20788	4559
Muzaffarnagar	16219	24889	41583	10019
Meerut	9657	19218	34389	10278
Kanpur	6015	10682	29950	6296
<u>METAL PRODUCTS AND PARTS</u>				
Aligarh	2472	9916	17075	3201
Agra	3966	9525	37292	4559
Meerut	5447	17497	25945	8354
Kanpur	3142	7557	19022	4025
<u>ELECTRICAL MACHINERY</u>				
Meerut	5581	25678	53954	11811
Lucknow	7761	17477	39019	15747
Allahabad	3678	18627	44708	4921

Table 5.7 : Capital Intensity and Productivity of the Prominent Districts for the Important Industry Groups (1980-81)

Industry Group	Fixed Capital per Worker (Rs.)	Productive Capital per Worker (Rs.)	Output per Worker (Rs.)	Value Added per Worker (Rs.)
1	2	3	4	5
<u>FOOD PRODUCTS</u>				
Saharanpur	8563 (3328)	11974 (4654)	25607 (9952)	4156 (1615)
Meerut	13393 (5205)	15045 (5847)	25639 (9965)	3877 (1507)
Muzaffarnagar	4946 (1922)	5906 (2295)	21173 (8229)	2333 (907)
Gorakhpur	5814 (2260)	8970 (3486)	20964 (8148)	4273 (1661)
Ghaziabad	41899 (16284)	77620 (30167)	504368 (196023)	70060 (27229)
Bijnore	6415 (2507)	7980 (3101)	21074 (8190)	3690 (1434)
Deoria	6847 (2661)	8053 (3130)	19860 (7719)	7726 (3003)
<u>COTTON TEXTILES</u>				
Meerut	20096 (7810)	33806 (13139)	48645 (18906)	10635 (4133)
Kanpur	10688 (4154)	14209 (5522)	32918 (12794)	12641 (4913)
Ghaziabad	22756 (8844)	31584 (12275)	67293 (26153)	16230 (6308)
<u>MACHINERY AND MACHINE TOOLS</u>				
Meerut	14111 (5484)	31384 (12197)	64584 (25101)	14574 (5664)
Kanpur	19767 (7682)	44743 (17389)	89675 (34852)	24384 (9477)

Table 5.7 (Contd....)

1	2	3	4	5
Ghaziabad	17734 (6892)	61027 (23718)	70885 (27549)	21873 (8501)
Lucknow	16492 (6410)	49863 (19379)	33835 (13150)	10955 (4258)
Agra	8296 (3224)	27542 (10704)	120967 (47014)	10602 (4120)
<u>CHEMICALS</u>				
Bareilly	5360 (2083)	32491 (12628)	77421 (30090)	21258 (8262)
Meerut	12786 (4969)	35034 (13616)	84548 (32860)	16937 (6582)
Kanpur	28960 (11255)	75207 (29229)	103204 (40110)	26767 (10403)
Dehra Dun	108980 (42355)	148806 (57833)	151258 (58786)	49081 (19075)
Ghaziabad	40540 (15758)	98569 (38309)	250512 (97361)	48573 (18878)
<u>NON-METALLIC MINERALS, PRODUCTS</u>				
Agra	1041 (405)	4132 (1606)	11270 (4380)	2663 (1035)
Meerut	4412 (1715)	16375 (6364)	61915 (24063)	13268 (5157)
Allahabad	30085 (11692)	45873 (17829)	86106 (33465)	29254 (11370)
Ghaziabad	25017 (9723)	34392 (13366)	69777 (27119)	17290 (6720)
<u>BASIC METALS AND ALLOYS</u>				
Agra	5646 (2194)	19241 (7478)	70537 (27414)	14910 (5795)
Muzaffarnagar	32355 (12575)	68487 (26617)	170392 (66223)	18943 (7362)

Table 5.7 (Contd.....)

1	2	3	4	5
Meerut	16847 (6548)	58532 (22748)	146457 (56921)	33313 (12947)
Kanpur	13144 (5108)	26075 (10134)	90793 (35287)	10014 (3892)
Ghaziabad	35396 (13757)	67262 (26141)	166396 (64670)	33373 (12970)
<u>METAL PRODUCTS AND PARTS</u>				
Aligarh	7747 (3011)	21622 (8403)	40115 (15591)	6814 (2659)
Agra	7540 (2930)	19861 (7719)	66986 (26034)	10016 (3893)
Meerut	11279 (4384)	119564 (46469)	195430 (75954)	11625 (4518)
Kanpur	7158 (2782)	17428 (6773)	46673 (18139)	7355 (2858)
Ghaziabad	35396 (13757)	43333 (16841)	68109 (26471)	19293 (7498)
<u>ELECTRICAL MACHINERY</u>				
Meerut	11318 (4399)	34687 (13481)	111735 (43426)	29266 (11374)
Lucknow	13329 (5180)	72875 (28323)	220887 (85848)	35669 (13863)
Allahabad	20742 (8061)	69287 (24480)	69632 (27062)	40879 (15888)
Ghaziabad	28286 (10993)	82501 (32064)	108850 (42305)	48100 (18694)

Note : Figures in brackets are the adjusted values at 1970-71 constant prices.

ANNEXURE I

Districtwise Employment and Value of Output for the Prominent Industry Groups (1961)

Industry Group Districts	Food Products		Cotton Textiles		Machinery and Machine Tools		(Output in Rupees Lakhs)
	Employment	Output	Employment	Output	Employment	Output	
Aligarh	240	9.7	2280	143.3	-	-	-
Agra	-	-	1700	71.7	280	27.9	27.9
Bareilly	1910	293.3	-	-	310	19.8	19.8
Bijnore	3000	537.1	-	-	-	-	-
Moradabad	3080	441.2	-	-	-	-	-
Saharanpur	3930	925.6	-	-	360	37.8	37.8
Muzaffarnagar	7920	1209.4	-	-	160	9.2	9.2
Meerut	6940	1219.1	8220	647.4	2500	138.2	138.2
Rampur	1630	302.8	-	-	-	-	-
Kanpur	-	-	54320	3901.6	1580	95.0	95.0
Lucknow	-	-	-	-	640	21.4	21.4
Gonda	2550	386.2	-	-	-	-	-
Gorakhpur	4600	704.5	1200	79.5	-	-	-
Basti	2500	360.6	130	3.6	-	-	-
Azamgarh	190	3.2	120	1.2	-	-	-
Varanasi	-	-	940	74.4	320	17.8	17.8
Mirzapur	-	-	1750	183.0	-	-	-
Naini Tal	1880	305.3	-	-	110	3.2	3.2
Sitapur	3000	622.1	-	-	-	-	-
Jaunpur	740	92.1	-	-	-	-	-
Total U.P.	67830	10769.3	79810	5877.7	4580	409.9	409.9

ANNEXURE II

Districtwise Employment and Value of Output in the Prominent Industry Groups (1971)

Industry Group	Food Products			Cotton Textiles			Machinery and Machine Tools			Chemicals			Non-Metallic Minerals			Basic Metals And Alloys			Metal Products			(Value of Output in Rs. Lakhs)		
	Employment	Output	ment	Employment	Output	ment	Employment	Output	ment	Employment	Output	ment	Employment	Output	ment	Employment	Output	ment	Employment	Output	ment	Employment	Output	ment
Districts																								
Allgarh	888	472.76	317	87.63	108	15.88	160	17.53	1318	84.99	268	32.91	1933	330.06	-	-	-	-	-	-	-	-	-	-
Mathura	46	43.62	-	-	-	-	110	12.35	-	-	259	38.21	480	89.75	-	-	-	-	-	-	-	-	-	-
Agra	390	449.01	63	9.01	1134	260.59	151	50.69	13261	765.23	1758	365.46	980	228.64	462	191.14	-	-	-	-	-	-	-	-
Mainpuri	191	63.95	-	-	-	-	-	-	1397	105.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Etah	74	35.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Farrukhabad	88	3.30	-	-	-	-	164	70.36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Etawah	754	366.17	-	-	-	-	2569	1849.51	-	-	228	72.34	-	-	-	-	-	-	-	-	-	-	-	-
Bareilly	1149	321.53	-	-	213	21.52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bijnore	6991	1564.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Budaun	340	22.81	-	-	149	18.38	-	-	-	-	231	82.11	679	181.88	-	-	-	-	-	-	-	-	-	-
Moradabad	4757	703.03	-	-	83	10.89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shahjahanpur	13551	512.97	-	-	129	27.75	318	61.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pilibhit	50	48.89	-	-	393	48.16	-	-	-	-	808	71.19	148	28.83	-	-	-	-	-	-	-	-	-	-
Saharanpur	5694	1574.75	-	-	4199	764.51	1420	858.02	433	157.53	6225	2140.71	2652	688.05	1607	867.04	-	-	-	-	-	-	-	-
Muzaffarnagar	9946	1913.90	-	-	2595.01	-	-	-	331	23.94	554	211.70	197	35.24	92	16.77	-	-	-	-	-	-	-	-
Meerut	7394	2647.38	10241	12.62	5890.21	317.97	3585	2328.35	-	-	3259	976.08	1904	362.18	804	144.14	-	-	-	-	-	-	-	-
Bulandshahr	-	-	79	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kanpur	1946	1342.82	37202	-	-	676	599.66	722	74.89	-	705	70.69	602	129.80	1431	558.37	-	-	-	-	-	-	-	-
Fatehpur	181	111.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lucknow	339	243.62	-	-	-	79	6.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unnao	34	36.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sitapur	3163	983.68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kheri	1078	55.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Allahabad	242	240.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gonda	2885	765.07	-	-	-	123	10.77	-	-	-	559	28.66	-	-	-	-	-	-	-	-	-	-	-	-
Bahraich	348	165.63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gorakhpur	4495	1176.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Deoria	7869	2067.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Basti	2404	577.80	78	2.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Azamgarh	-	-	509	71.30	-	-	1110	301.10	-	-	424	89.92	-	-	537	92.82	-	-	-	-	-	-	-	-
Varanasi	187	294.22	-	-	379	47.84	-	-	-	-	252	128.25	-	-	-	-	-	-	-	-	-	-	-	-
Mirzapur	30	29.30	-	-	37	7.64	202	62.85	333	31.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jhansi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Banda	123	44.76	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naini Tal	143	119.29	-	-	-	-	3283	932.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dehra Dun	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.P.	87472	2653701	59170	11151.67	12515	3030.35	21256	10935.14	24359	2257.40	20869	5598.99	12190	2369.25	18445	5336.68	-	-	-	-	-	-	-	-

ANNEXURE III																
Districtwise Employment and Value of Output in the Prominent Industry Groups (1980-81)																
(Value of Output in Rs. Lakhs)																
Industry Group	Food Products		Cotton Textiles		Chemicals		Non-Metallic Minerals		Basic Metals And Alloys		Metal Products		Machinery and Tools		Electrical Machinery	
	Employment	Output	Employment	Output	Employment	Output	Employment	Output	Employment	Output	Employment	Output	Employment	Output	Employment	Output
Districts	ment		ment		ment		ment		ment		ment		ment		ment	
Alligarh	1341	2525.04	103	386.87	214	165.68	1800	227.61	582	345.52	1481	594.10	62	28.54	71	40.19
Mathura	444	404.43	95	47.57	52	16.75	287	84.48	351	181.47	429	314.22	252	142.93	-	-
Agra	1078	2691.57	-	-	184	238.66	22832	2573.08	3816	2691.70	541	362.40	1189	1438.30	495	794.00
Mainpuri	591	426.25	-	-	31	74.07	1592	441.42	-	-	-	-	52	43.15	-	-
Etah	-	-	-	-	-	-	-	-	36	33.59	65	34.48	-	-	-	-
Farrukhabad	86	8.30	-	-	52	51.36	-	-	-	-	42	14.45	-	-	-	-
Etawah	1248	550.36	-	-	199	309.57	-	-	93	61.00	-	-	810	58.66	-	-
Bareilly	4773	1365.67	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bijnore	28576	6022.17	115	22.11	-	-	-	-	-	-	-	-	-	-	-	-
Budaun	336	71.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moradabad	13057	2361.27	-	-	250	337.13	-	-	151	182.92	915	1296.78	137	78.07	-	-
Rampur	823	123.70	-	-	459	106.37	-	-	-	-	-	-	117	58.74	-	-
Shahjahanpur	6203	1383.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pilibhit	6959	1620.99	-	-	521	335.61	126	36.03	1825	1741.92	259	227.92	293	175.13	9156	16601.11
Saharanpur	19079	4885.50	-	-	170	135.93	-	-	1035	1763.56	68	24.90	236	127.44	-	-
Muzaffarnagar	32787	6941.90	-	-	206	174.17	165	102.16	282	413.01	165	322.46	414	267.28	642	717.34
Meerut	20019	5132.77	2583	1256.49	2730	6838.98	2330	1625.81	7974	13268.40	3096	2108.85	4540	3218.20	5105	5556.78
Ghaziabad	2020	1188.24	13617	9163.25	-	-	561	115.16	417	790.75	74	37.22	-	-	26	42.73
Bulandshahr	146	20.36	-	-	4468	4611.16	-	-	3401	3087.86	1911	891.92	2526	2265.20	384	256.75
Kanpur	1789	3001.33	33820	11132.83	-	-	-	-	-	-	-	-	-	-	-	-
Fatehpur	496	369.78	-	-	1036	716.07	217	116.86	1812	1453.91	443	205.01	486	164.44	240	530.13
Lucknow	837	355.21	-	-	-	-	-	-	779	856.28	43	16.31	-	-	-	-
Unnao	-	-	-	-	-	-	-	-	141	74.07	-	-	-	-	3850	906.88
Rae Bareilly	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sitapur	5385	2202.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kheri	8489	2579.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Allahabad	124	88.54	-	-	530	389.07	1042	897.22	1765	1221.22	463	157.24	94	35.09	5166	3597.18
Gonda	11121	1238.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bahraich	346	581.90	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gorakhpur	9507	1993.07	-	-	2293	2541.73	227	32.68	572	197.94	92	87.06	-	-	-	-
Deoria	21434	4256.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Basti	5690	953.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Azamgarh	631	121.11	-	-	47	13.62	-	-	-	-	-	-	-	-	-	-
Varanasi	169	280.32	-	-	70	72.00	312	74.45	145	80.43	252	144.82	630	320.42	834	451.38
Mirzapur	-	-	-	-	-	-	-	-	-	-	108	78.04	271	160.94	-	-
Jaunpur	-	-	-	-	-	-	-	-	-	-	-	-	94	22.66	-	-
Jhansi	-	-	-	-	45	9.76	357	167.77	315	146.92	-	-	-	-	-	-
Banda	78	23.51	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Naini Tal	8393	3646.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pauri Garhwal	99	131.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dehra Dun	150	26.09	-	-	3169	4685.34	-	-	-	-	-	-	102	32.59	857	127.71
U.P.	270537	90428.26	71872	31916.53	27263	36370.39	39307	9560.76	32384	40501.50	13719	8010.05	17030	12084.84	36786	36906.28

CHAPTER VI

Analysis of the Levels of Industrial Activity and Indicators of Economic Growth

CHAPTER VI

Analysis of the Levels of Industrial Activity and Indicators of Growth

In the preceding chapters an attempt has been made to study the levels of industrial activity on a district-wise basis and for the state as a whole and to get an idea of product and spatial diversification of the units across the districts of the State.

In this chapter we shall examine relationships between industrial activity and some other indicators of economic growth. Industrial activity has been seen in terms of the number of factories as well as factory employment on a district-wise basis.

As far as the selection of the indicators is concerned we have taken gross value of agricultural produce per hectare of net area sown and the percentage of area under commercial crops to the Gross Cropped Area. These variables should be able to reflect the local demand for industrial products as well as the raw material base. Road mileage, percentage of villages electrified and bank branches per lakh of population have been taken to represent the general level of infrastructure development.

Since the State economy is basically agricultural, and has a strong base of the food products industries it is hoped that the two indicators of agricultural development may prove helpful in explaining industrial development. Similarly it is very well established that infrastructure plays an important role in not only the overall development but particularly in industrial development. In fact, many feel that it is a pre-condition for development especially industrial.

6.1 Level of Agricultural Development

In 1961 the average value of the gross value of agricultural produce per hectare and the percentage area under commercial crops for the State as a whole were Rs.675.75 and 15.59 respectively. Of the 37 districts, where factories were located, 20 had a higher value of agricultural produce of which 8 were from the western region and two from the Hills. The remaining were equally divided between the Central and Eastern regions respectively. Similarly there were 19 districts having a share in commercial crops higher than the State average. Their distribution among regions was similar to that found in value of agricultural produce but for the fact that the

Western region had a slightly higher number of districts with a concentration in commercial crops.

It may be recalled that there were 15 districts in 1961 which specialised in the production of food products. Only six districts from out of these had either a lower value of agricultural produce per hectare on area under commercial crops lower than the State average. The three leading districts of the State in the food products group viz. Muzaffarnagar, Meerut and Saharanpur had a value of agricultural produce per hectare of Rs.1144.34, 1084.35 and Rs.911.46. Their rankings were the highest in the State for this indicator. Similarly they were also the highest ranked districts with respect to area under commercial crops with each district having at least 35 per cent of its area under commercial crops. These three districts between them contributed 27.70 and 31.15 per cent respectively towards the total employment and output being generated by the food products industry group in the State as a whole.

By 1971 the average value of gross output from agriculture per hectare had gone up to Rs.1609.79 and the State average for area under commercial crops stood

at 7.5 per cent. Green Revolution had brought about the overall development of agriculture and thus 28 out of the 46 districts having industrial units had a higher value of agricultural produce than the State average. The period 1961-71 also witnessed a good growth of both industrial units as well as in factory employment. The number of food products manufacturing units had got located in 32 districts. It could therefore be possible that the growth of agricultural productivity could have made its contribution not only towards the growth of the industrial sector in general but that of the food products group in particular.

However, this decade experienced a considerable reduction in the area under commercial crops. It could possibly be because the Green Revolution proved particularly favourable for wheat and so the cultivators changed their cropping pattern. Still there were 22 districts which had a higher area under commercial crops than the State average.

Looking at districts with the food products industry it is found that once again only 6 and 5 districts respectively had a lower than State average agricultural produce

and area under commercial crops. The leading districts again were those where agriculture, by way of these indicators, was found to be more developed. By 1980-81 the gross value of agricultural production had gone up substantially. In terms of area under commercial crops the increase was not very much and the level reached in 1961 could not be attained. However, despite the fact that agricultural productivity in the State as a whole had gone up only 23 out of a total of 51 districts having registered factories had a higher agricultural productivity per worker. This number got further reduced to 18 in the case of districts that had a higher percentage of area under commercial crops than that obtained in the State as a whole.

This period (1971 - 1980-81) witnessed a very high rise in the number of units of the food products group and so also in employment within this industry group. But maximum share of the increased units as well as employment was concentrated in the Western region particularly in districts like Bareilly, Bijnore, Moradabad, Saharanpur, Muzaffarnagar, Meerut and Ghaziabad. These districts had a relatively much higher area under commercial crops and the value of agricultural produce per hectare was also found higher than the State average.

To sum up therefore, the State experienced an increasing trend in agricultural productivity between 1961 and 1980-81. The area under commercial crops, on the other hand, declined between 1961 and 1971 and then again increased in 1980-81. This was the period during which there was a considerable increase in industrial activity as well. At all the three points of time the food products group of industries maintained their importance in the industrial structure of the State whether we look at number of units, industrial employment or output of the registered factories. Thus the agricultural development can be said to have contributed towards the growth of this industry group quite directly and also indirectly towards the overall industrial development which took place in the State. The table below presents the changes in units, employment, value of agricultural produce and area under commercial crops for the three points of time.

Table 6.1 : Brief Picture of Industrial and Agricultural Growth in U.P.

Year	Units		Employment		Value of agricultural produce/per ha. (Rs)	% area under commercial crops
	Total	Food Products	Total	Food Products		
1961	1064	350	195310	5860	675.75	15.59
1971	3649	932	401156	90805	1788.28	7.50
1981	5540	1575	756994	207537	4637.31	9.98

6.2 Infrastructure Development and Industrialisation

Infrastructure is one of the important factors influencing development. For the entrepreneur, the presence of a well developed infrastructure may certainly prove helpful in his locational decision making since infrastructure is one of the factors which affects location. The State government, realising the importance of this factor, has invested increasing amounts of money in successive plans with a view to achieve a balanced development of infrastructure facilities. We shall now try to see the extent to which the efforts of the government have proved fruitful and whether or not the development of infrastructure has facilitated industrial development. For this we are taking road transport, power and banking facilities as the main infrastructure facilities. We have used the availability of metalled roads per thousand square kilometers of area as the proxy for measuring development of road transport and percentage of electrified villages to total villages as the proxy for indicating power development. Banking facilities are being looked at in terms of bank branches per lakh of population (Tables 6.2, 6.3 and 6.4).

In 1961 the levels of infrastructural development were rather poor. The average length of metalled roads per thousand square kilometers of area was only 82.12 kilometers. Industrial activity during 1961 was limited mainly to 37 districts. Of these 27 had a road kilometerage above the State average. The units of all the three major industries were, therefore, mainly located in districts where road transport facilities were relatively better developed. Muzaffarnagar and Meerut, which had the highest share of the food products units had an average road length of 112.98 and 122.29 kilometers which was considerably higher than the average obtained in the State. Cotton textiles had maximum concentration in Kanpur but its road transport network was not found to be highly developed being only slightly higher than the State average. The other important centres Meerut and Aligarh, however had a relatively higher network of roads.

By 1971 there had been only a marginal improvement in the overall road kilometerage in the State. As against 82 kilometers in 1961 there were 90 kilometers of metalled roads in the State per thousand square kilometers of area. Of the 46 districts having industrial units only around 61.88 per cent had a better road network

than the State average. This percentage was lower as compared to 1961 (72.97 per cent) which goes to show that entrepreneurs had been lured into establishing new industrial units despite the proper development of road transport.

However, what is observed that the new industry groups which emerged as significant in 1971 were very heavily concentrated in districts having a relatively better network of roads. Thus all the 11 districts having units producing metal products had well developed roads. In fact it is the food products group which is found in the districts which do have registered factories but do not have adequately developed roads. The food products group mainly comprises of units based on local raw material such as sugarcane and oil seeds and for such units the ready availability of raw material seems to outweigh the presence of developed infrastructure facilities.

The decade (1971 - 1980-81) saw a distinct improvement in the development of road transport services. The increase in road kilometerage was of around 80 per cent. Once again it was noticed that the percentage of districts

having a higher road kilometerage than the State was around the same as found in 1971. Although in most districts having industries despite poor net work of roads the food products group of industries had been set up there were districts from this category where even other industry group units also got located. It therefore seems that some of the incentives and subsidies which the government had introduced during the 1970's, to attract industries in backward areas, could have been the cause behind the location of units in areas having a relatively poor development of transport facilities. However, it goes without saying that the new industry groups continued to be largely concentrated in districts which had a developed infrastructure of roads.

The second infrastructure facility power was in a rather poor shape in 1961. By 1971 however nearly 18.5 per cent of the villages of the State had been electrified which again is not too high a figure. In fact power services in the State have generally been poor. It is not so much because of lack of the infrastructure itself, which is of course to be developed fully but more so since its maintainance, distribution and other

aspects are not properly taken care of. As a result the industrial units are unable to get regular and uninterrupted supply of power. In 1971 only around 50 per cent of the districts with industries were above the State average.

By 1980-81 the percentage of village electrification (34.31 per cent) had almost doubled as compared to 1971. The new industry groups such as chemicals, non-metallic mineral products, metal products and parts etc. were mainly concentrated in districts with a relatively better power position.

Coming to banking facilities it is observed that in 1961 there was not even one bank branch per lakh of population. Around 57 per cent districts, having industrial units, had better banking facilities than the State average. By 1971 the number of bank branches had gone up to 1.44 which meant an improvement of around 118 per cent. Although the change by itself is substantial the base had been low so the overall picture left much to be desired. However in a State with a predominantly rural population such an improvement could not be expected. Since till the late 1960's the banking

industry was privately owned and with profit being their primary motive, the expansion of banking services was confined to urban areas. Since between 1961 and 1971 there was considerable increase in industrial activity covering in all 46 districts, industries also got located in areas where banking facilities were relatively poor. However units besides food products got located primarily in the districts having better banking facilities since most of them are relatively more capital intensive.

The nationalisation of the banking sector saw the spreading of bank branches even to the remote areas. Consequently by 1980-81 there were nearly 4.5 bank branches per lakh of population. By 1980-81 as many as 51 districts of the State had three or more registered factories located in them. Industries besides, the traditional ones, however, got located more easily where the banking facilities were better available.

To sum up, therefore, it is seen that over years of consistent investment in infrastructure facilities there has certainly been improvements in road transport, power and banking services of the State. Although industrial activity has tended to find locations favourable

from the point of infrastructural development, some industrial activity has taken place even in locations where such facilities are not as well developed. In Table 6.5, a percentage share of districts having a relatively higher level of development of the three infrastructure indicators than the State average to the total number of districts which have a particular industry group is being given. It clearly brings out the relative importance which infrastructure plays in the industrial development process.

To further ascertain as to whether these indicators of development - both related to agriculture and infrastructure have being further analysed using the multi-regression approach. Regressions have been run at all the three points of time. There are two main sets of regressions. One where the number of units located in each district has been taken as the dependent variable while in the second factory employment of the district is the dependent variable. The independent variables are :

- i. Gross value of agricultural produce per hectare of Net Area Sown,
- ii. Percentage of area under commercial crops to the Gross Cropped Area,

- iii. Length in kilometers of metalled roads per thousand square kilometers of area,
- iv. Percentage of electrified to total villages, and
- v. Bank branches per lakh of population.

For each year four separate regressions were run. In the first case the total units were regressed against all the independent variables and then area under commercial crops and banking facilities were left out. The same was done taking factory employment as the dependent variable.

In 1961 taking units and all independent variables, road mileage and banking facilities turned out to be significant at 5 per cent and 10 per cent levels respectively. When this exercise was carried out with employment and all independent variables only banking facilities was found significant at 5 per cent. However, when we dropped two independent variables viz. commercial farming and banking facilities the value of gross output proved significant at 10 per cent level. By and large therefore the infrastructure facilities seen to be playing a positive role in the industrial activity.

In 1971 only banking services proved to be significant (at 5 per cent) when the regression exercise was carried out with number of units and employment.

The results of 1980-81 highlight the significance of the indicators of agricultural development. When the regression taking all variables was run in both cases the intensity of commercial cropping was found significant at 5 per cent level. However in the absence of this variable it was the value of agricultural produce which was significant. This is not all together very surprising since between 1971 - 1980-81 there was a very high increase in units as well as employment in the food products producing industry group. Their direct association with agriculture is quite understandable since this industry group has a high degree of dependence on the primary sector for its basic raw material inputs.

On the whole, therefore, agriculture as well as infrastructure seem to contribute towards the level of industrial development. This had also been brought out when we looked at the locational pattern of industries district-wise and product-wise along with the presence of these basic indicators of development. Districts like Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Kanpur, Lucknow, Allahabad and Varanasi which generally have a better than average level of agricultural and infrastructural development are the districts which also have a highly diversified industrial base as well.

The results of the regression analysis are being given in Table 6.6.

Infrastructure development is only a part of the various promotional measures which the State government has been taking over the years to give industrial development a much required boost. The next chapter, therefore, shall try to look into these promotional measures and the success achieved through them.

Table 6.6 : Results of the Regression Analysis

1961

1. No. of Units	$5.0921 + 0.5437 x_1 + 1.0291^* x_2 + 0.0986 x_3 + 0.07627 x_4 + 0.0782^{**} x_5$ (0.398) (1.732) (0.928) (0.123) (2.830)	$R^2=0.5796$
2. No. of Units	$-10.717 + 1.7070 x_1 + 0.5255 x_2 + 0.0662 x_3$ (1.482) (0.781) (0.589)	$R^2=0.3708$
3. Employment	$-6.5756 + 2.1287 x_1 + 0.3614 x_2 + 0.1210 x_3 - 0.2992 x_4 + 0.6873^{**} x_5$ (1.245) (0.414) (0.812) (0.346) (1.774)	$R^2=0.4572$
4. Employment	$-9.0623 + 2.5830^{**} x_1 - 0.340 x_2 + 0.0754 x_3$ (1.758) (0.040) (0.526)	$R^2=0.3586$

Contd.../-

Table 6.6 (Contd.....)

1971

1. No. of Units	$1.6760 - 0.6193 x_1 + 0.9265 x_2 +$ $0.3615 x_3 + 0.4959 x_4 + 1.1884^* x_5$ $(0.629) \quad (0.832) \quad (0.7659) \quad (1.384) \quad (2.833)$	$R^2 = 0.6684$
2. No. of Units	$-8.8674 + 1.0282 x_1 + 0.5977 x_2 +$ $0.7198 x_3$ $(0.982) \quad (0.628) \quad (1.395)$	$R^2 = 0.4118$
3. Employ- ment	$1.7374 - 0.5184 x_1 + 1.8962 x_2 +$ $0.0707 x_3 + 0.6284 x_4 + 0.9882^* x_5$ $(0.459) \quad (1.483) \quad (0.130) \quad (1.527) \quad (2.511)$	$R^2 = 0.6242$
4. Employ- ment	$-7.6052 + 1.1768 x_1 + 1.2307 x_2 +$ $0.4924 x_3$ $(1.031) \quad (1.187) \quad (0.876)$	$R^2 = 0.4189$

1981

1. No. of Units	$-8.1929 + 0.6948 x_1 + 0.4363 x_2 +$ $0.6057 x_3 + 0.4099^* x_4 + 0.6144 x_5$ $(0.728) \quad (0.549) \quad (1.091) \quad (2.181) \quad (1.012)$	$R^2 = 0.5451$
2. No. of Units	$-14.1249 + 1.6843^{**} x_1 + 0.2962 x_2 +$ $0.6078 x_3$ (1.887)	$R^2 = 0.4576$

Contd.../-

Table 6.6 (Contd....)

3. Employ- ment	-3.7143 + 1.0226 x_1 + 0.0829 x_2 + (0.932) (0.091)	$R^2=0.5335$
	0.6031 x_3 + 0.5259* x_4 + 0.1040 x_5 (0.945) (2.434) (0.150)	
4. Employ- ment	-10.2345 + 2.1292* x_1 - 0.2392 x_2 + (2.071) (0.258)	$R^2=0.4385$
	0.6015 x_3 (0.906)	

Figures in brackets are T-Values

* Significant at 5% level

** Significant at 10% level

where,

x_1 = Gross value of agricultural produce per hectare
of Net Area Sown

x_2 = Length in Km. of metalled roads per thousand
square km. of area

x_3 = Percentage of electrified to total villages

x_4 = Percentage of area under commercial crops to
Gross Cropped Area

x_5 = Bank branches per lakh of population

Note : These independent variables are common at all
3 points of time.

Table 6.2 : District-wise Units, Employment and Some Indicators of Agricultural and Infrastructural Development in U.P. (1961)

Sl. No.	Districts	No. of Units	Employment	Per hectare value of agricultural produce (Rs.)	Length in km. of roads per '000 sq. km. of area	Percentage of electrified villages	Percentage of area under commercial crops	Bank branches per lakh of population
0	1	2	3	4	5	6	7	8
1.	Agra	175	12540	624.85	110.52	0.02	12.56	1.07
2.	Aligarh	30	4100	602.06	116.21	0.74	15.79	0.67
3.	Bareilly	33	3460	643.97	73.03	1.87	20.83	1.28
4.	Bijnor	47	3960	769.63	106.56	2.42	30.80	1.09
5.	Budayun	4	670	598.56	71.53	0.01	15.26	0.49
6.	Bulandshahr	7	250	841.48	108.01	12.16	24.20	0.63
7.	Farrukhabad	21	460	762.02	88.38	0.34	17.87	0.77
8.	Mainpuri	5	1790	644.31	118.33	0.07	9.27	0.50
9.	Mathura	5	240	588.54	113.08	0.01	19.28	0.95
10.	Meerut	111	20330	1084.55	122.29	0.12	42.65	1.17
11.	Moradabad	26	3680	683.78	94.20	1.75	24.18	0.86
12.	Muzaffarnagar	98	8370	1144.34	112.98	1.19	45.67	0.96

Contd.../-

Table 6.2 (Contd....)

0	1	2	3	4	5	6	7	8
13. Rampur	7	4370	799.84	111.78	4.60	22.21	0.28	
14. Saharanpur	23	7950	911.46	89.47	5.54	35.11	1.11	
15. Shahjahanpur	27	2040	674.13	61.36	3.79	16.14	0.70	
16. Barabanki	5	1410	872.14	78.67	0.10	11.95	0.21	
17. Kanpur	153	64270	745.99	86.73	0.19	9.74	1.55	
18. Kheri	25	2630	692.77	54.36	1.08	22.72	0.23	
19. Lucknow	48	5120	720.46	132.31	0.01	10.22	1.56	
20. Sitapur	6	3130	630.34	71.71	0.13	15.81	0.43	
21. Unnao	6	660	705.33	79.85	0.01	9.84	0.24	
22. Allahabad	24	3380	669.38	100.26	2.98	8.27	0.61	
23. Azamgarh	8	310	724.36	111.86	1.06	12.31	0.12	
24. Bahraich	3	970	442.97	45.06	0.10	7.24	0.33	
25. Ballia	3	70	630.53	107.15	0.16	11.44	0.29	
26. Basti	9	2640	610.24	74.45	0.41	10.18	0.22	
27. Deoria	16	10240	831.60	140.24	0.24	19.27	0.29	
28. Faizabad	6	560	862.69	94.02	0.03	11.04	0.42	
29. Ghazipur	3	120	602.03	95.17	0.15	11.66	0.22	
30. Gonda	8	2750	576.78	68.09	0.10	10.25	0.48	
31. Gorakhpur	15	7090	641.95	87.89	0.19	11.25	0.46	
32. Jaunpur	7	910	750.39	115.58	1.50	11.75	0.28	
33. Mirzapur	11	1920	648.25	48.78	0.01	17.17	0.64	
34. Varanasi	44	2650	735.31	120.49	0.02	19.76	0.93	
35. Jhansi	4	90	406.43	66.70	0.01	6.33	0.82	
36. Dehra Dun	12	1520	791.87	56.41	0.13	25.04	4.19	
37. Nainital	12	2430	925.33	34.07	1.32	23.15	3.48	
Others	22	6190	-	-	-	-	-	
U.P.	1064	195310	675.75	82.12	0.86	15.59	0.66	

Table 6.3 : District-wise Number of Units, Employment and Indicators of Agricultural and Infrastructural Development (1971)

Sl. No.	Districts	No. of units	Employment	Per hectare value of agricultural produce (Rs.)	Length in km. of roads per '000 sq. km. of area	Percentage of electrified villages	Percentage of area under commercial crops	Bank branches per lakh of population
0	1	2	3	4	5	6	7	8
1.	Agra	410	25597	1334.72	128.32	26.57	12.28	2.69
2.	Aligarh	186	9835	2060.62	93.35	37.57	7.68	1.42
3.	Bareilly	75	12976	1612.91	82.67	18.78	11.40	1.40
4.	Bijnor	112	10079	1868.62	129.67	36.16	14.41	1.54
5.	Budayun	17	1103	1446.66	69.79	22.99	11.55	0.97
6.	Bulandshahr	61	3151	2128.21	110.93	44.76	10.47	1.16
7.	Farrukhabad	35	1111	1788.12	80.25	21.22	9.41	1.48
8.	Mainpuri	36	3697	1522.69	93.79	24.75	6.37	0.90
9.	Mathura	56	2138	1642.45	113.77	19.68	10.61	2.02
10.	Meerut	503	50209	2496.27	142.50	51.97	18.49	2.88
11.	Moradabad	121	8145	1733.26	97.88	35.75	10.56	1.61
12.	Muzaffarnagar	192	12457	2697.83	139.22	49.95	20.17	2.44
13.	Rampur	21	4243	1009.22	110.03	31.23	7.35	1.22
14.	Saharanpur	100	21278	2209.27	110.93	35.19	18.75	2.29
15.	Shahjahanpur	65	4034	1647.69	81.86	16.33	8.92	0.93
16.	Barabanki	7	1084	1726.11	62.19	15.88	23.56	0.86
17.	Kanpur	508	72930	1639.31	90.51	13.44	7.71	3.14
18.	Kheri	26	3073	1433.31	69.17	26.17	10.04	0.81
19.	Lucknow	188	22842	1671.09	134.10	18.63	6.55	3.03
20.	Sitapur	28	5247	1479.93	70.76	6.91	9.20	0.74
21.	Unnao	29	1711	1701.86	81.55	5.24	6.64	0.74

Contd.../-

Table 6.3 (Contd....)

	0	1	2	3	4	5	6	7	8
22. Allahabad	163	18233	1486.93	116.61	20.50	4.20	1.46		
23. Azamgarh	31	1682	1548.31	135.10	25.72	1.92	0.84		
24. Bahraich	29	1495	1132.08	59.53	10.93	5.19	0.69		
25. Ballia	4	278	1609.51	145.15	14.44	0.40	0.88		
26. Basti	10	2613	1566.24	104.94	15.28	2.03	0.67		
27. Deoria	22	8250	1765.86	161.85	18.57	1.25	0.53		
28. Faizabad	17	1299	1613.48	98.49	24.91	3.58	0.93		
29. Ghazipur	3	809	1483.78	114.46	24.38	3.32	1.11		
30. Gonda	19	3504	1304.82	91.39	15.28	3.17	0.65		
31. Gorakhpur	64	17446	1670.52	118.75	15.73	2.06	1.22		
32. Jaunpur	16	956	1614.05	103.71	22.10	2.82	0.70		
33. Mirzapur	39	4388	1206.05	56.10	10.56	6.58	1.23		
34. Varanasi	171	13362	1461.90	124.73	20.73	5.22	2.17		
35. Jhansi	35	7003	891.53	74.49	7.52	5.55	1.61		
36. Dehra Dun	67	8675	2097.15	156.74	14.21	7.89	7.28		
37. Nainital	37	3173	2906.47	111.75	16.09	11.43	5.06		
38. Etah	13	1302	1761.33	90.13	25.59	7.04	1.02		
39. Etawah	49	1290	1712.54	80.89	14.49	7.97	1.31		
40. Pili hit	7	2695	1788.28	74.49	19.90	7.62	1.46		
41. Fatehpur	14	326	1417.09	84.62	18.12	4.01	0.94		
42. Hardoi	7	981	1632.09	70.69	9.37	13.43	0.65		
43. Sultanpur	4	1354	1644.37	121.38	17.42	4.16	0.55		
44. Pratapgarh	4	109	1650.07	89.81	10.84	4.09	0.56		
45. Jalaun	3	58	830.78	68.37	9.40	4.33	0.98		
46. Banda	5	187	1054.82	65.93	14.08	2.55	1.02		
Others	32	22513	-	-	-	-	-		
U.P.	3649	401156	1609.79	90.04	18.40	7.50	1.44		

Table 6.4 : District-wise Units, Employment and Indicators of Agricultural and Infrastructural Development (1981)

Sl. No.	Districts	No. of units	Employment	Per hectare value of agricultural produce (Rs.)	Length in km. of roads per '000 sq. km. of area	Percentage of electrified villages	Percentage of area under commercial crops	Bank branches per lakh of population
1.	Agra	626	38510	4145.92	212.49	39.04	15.29	5.33
2.	Aligarh	221	11536	4649.90	162.98	46.18	6.89	3.63
3.	Bareilly	106	18656	4674.06	167.96	35.39	11.42	4.19
4.	Bijnor	279	30209	7448.43	197.98	33.16	30.84	3.58
5.	Budaun	15	2597	3879.16	119.78	36.91	12.93	5.04
6.	Bulandshahr	93	6891	6605.98	178.31	68.23	12.45	3.32
7.	Farrukhabad	37	2214	5215.85	154.19	49.94	16.41	4.69
8.	Mainpuri	51	3876	4249.03	171.54	33.73	8.33	3.60
9.	Mathura	83	4692	3858.64	224.35	39.38	9.57	5.90
10.	Meerut	284	30287	9992.19	213.50	92.99	30.84	6.00
11.	Moradabad	224	22480	6296.75	159.04	50.13	18.15	5.24
12.	Muzaffarnagar	336	35994	10213.80	199.18	72.49	32.79	5.16
13.	Rampur	35	9390	5396.97	202.79	55.81	8.86	4.08
14.	Saharanpur	286	39755	7268.68	165.09	42.23	22.11	5.35
15.	Shahjahanpur	89	8218	4345.86	127.21	31.70	7.58	4.19
16.	Barabanki	13	5593	4594.94	137.92	29.75	5.93	3.43
17.	Kanpur	611	73725	4685.88	157.06	28.38	11.41	6.89
18.	Kheri	44	8648	4380.40	114.19	37.66	19.05	4.02
19.	Lucknow	389	152918	5081.32	244.07	72.83	4.95	7.78
20.	Sitapur	32	7208	3860.76	117.01	17.79	11.46	4.53
21.	Unnao	58	3138	3902.70	155.77	18.45	5.62	4.11
22.	Allahabad	176	24761	4838.56	209.89	49.62	3.56	5.16
23.	Azamgarh	45	3541	5085.10	204.53	33.48	7.70	3.48

Contd.../-

Table 6.4 (Contd....)

0	1	2	3	4	5	6	7	8
24. Bahraich	21	1765	2326.92	119.82	28.44	5.52	2.79	
25. Ballia	3	1487	4937.74	219.82	20.12	5.58	4.78	
26. Basti	19	6942	3657.35	144.28	27.58	5.42	2.52	
27. Deoria	23	22062	5138.52	192.29	30.65	12.21	3.15	
28. Faizabad	25	3329	4772.49	168.66	46.32	6.55	3.29	
29. Ghazipur	6	1898	4562.44	208.17	26.01	5.48	3.91	
30. Gonda	23	12471	3638.38	136.97	26.79	5.92	2.82	
31. Gorakhpur	75	23138	4203.32	160.53	23.85	5.42	3.95	
32. Jaunpur	13	1770	5252.11	228.08	30.25	8.00	3.13	
33. Mirzapur	39	11244	3280.51	95.40	14.21	6.27	4.33	
34. Varanasi	206	17424	4971.49	231.93	34.11	7.10	5.19	
35. Jhansi	42	9701	2316.00	164.01	19.30	2.72	5.38	
36. Dehra Dun	93	8750	5825.38	299.87	42.21	9.33	11.75	
37. Nainital	60	11525	7650.05	245.22	57.03	12.98	8.38	
38. Etah	17	2014	4348.38	170.27	39.72	0.01	3.32	
39. Etawah	55	2378	4093.47	161.58	33.18	11.02	3.60	
40. Pilibhit	17	7055	5835.47	139.47	29.87	10.85	4.67	
41. Fatehpur	33	905	3917.01	158.96	51.24	5.09	3.56	
42. Hardoi	14	3230	3750.02	137.99	18.61	8.98	3.57	
43. Sultanpur	4	293	4309.58	186.88	63.39	3.75	3.68	
44. Pratapgarh	3	107	4418.44	184.83	25.96	4.13	2.77	
45. Jalaun	-	-	-	-	-	-	-	
46. Banda	6	278	2748.96	119.23	26.64	1.52	3.19	
47. Ghaziabad	555	57022	7974.91	194.21	80.00	17.47	8.30	
48. Rae Bareli	23	7848	3775.74	204.82	98.21	4.25	4.13	
49. Almora	13	804	3887.18	287.28	31.37	8.65	6.34	
50. Garhwal	11	252	3484.07	249.45	17.43	0.59	7.05	
51. Tehri Garhwal	5	64	3719.04	201.31	15.45	1.10	6.49	
52. Uttar Kashi	3	155	4350.00	69.99	34.55	2.60	11.54	
U.P.	5540	765994	4637.31	162.34	34.31	9.98	4.49	

Table 6.5 : Percentage Distribution of Districts (Industry Group-wise) with a Better Infrastructural Development than the State

Industry Group	Years	Percentage of Districts having better Performance than State		
		Transport	Power	Banking
1. Food Products	1961	60.67	66.67	53.33
	1971	68.75	65.62	50.00
	1980-81	52.78	50.00	50.00
2. Cotton Textiles	1961	77.78	22.22	55.56
	1971	100.00	71.43	42.86
	1980-81	83.33	66.67	66.67
3. Machinery and Machine Tools	1961	77.78	44.44	100.00
	1971	71.42	64.29	57.14
	1980-81	77.78	66.67	66.67
4. Chemicals	1961	-	-	-
	1971	76.93	76.92	84.61
	1980-81	75.00	65.00	70.00
5. Non-metallic Mineral Products	1961	-	-	-
	1971	85.71	85.71	57.14
	1980-81	92.31	69.23	69.23
6. Basic Metals & Alloys	1961	-	-	-
	1971	86.67	80.00	66.66
	1980-81	78.95	73.68	63.16
7. Metal Products & Parts	1961	-	-	-
	1971	100.00	90.91	81.82
	1980-81	66.67	66.67	61.11
8. Electrical Machinery	1961	-	-	-
	1971	80.00	70.00	70.00
	1980-81	91.67	83.33	75.00

CHAPTER VII

State Policy For Industrial Dispersal

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State Policy For Industrial Dispersal

At the inception of planning in India wide ranging disparities existed in the levels of industrial development at the inter-regional levels and so attention was focused on this aspect in our plans. Although the First Plan was primarily concerned with the expansion of the existing units, the dispersal of industrial activity was given due weightage in the Second Plan which laid down the location of new units in different regions as well as the development of infrastructure facilities among its main objectives. The Third Plan put forward the concept of large units to serve as the nuclei for regional growth.

However, the results achieved during these plans were not very satisfactory. The Fourth Plan, therefore, witnessed the introduction of various schemes of incentives and subsidies based on the recommendations of the Pande and Wanchoo Working Groups. The government and some financial institutions also began undertaking regional studies in order to identify specific programmes for investment in

the backward areas. The Fifth Plan laid emphasis on the identification of industries suited to the needs and potentials of backward areas and for providing financial and other assistance to entrepreneurs setting up units in the backward areas. The Sixth Plan witnessed a change in emphasis from the development of large scale to small scale projects in industrial dispersal programmes, since it was realised that a large capital intensive project need not necessarily play the role of a growth catalyst in a backward area as had been envisaged. The spread effects of the large scale units had not been found sufficient to influence industrial activity around them to the desired level.

7.1 Schemes of Incentives and Subsidies

The Central and State Governments have, over a period of time, evolved various schemes of subsidies and incentives with a view to giving industrial activity some impetus and to help diversification of industries in favour of backward areas. Thus some subsidies and incentives are only for the selected backward districts while the others are general and can be availed by even the non-backward districts although the extent or the amount of availment is less in the case of the backward districts.

Some of the important subsidies and incentives being offered are being given below:

(i) Central Investment Subsidy : The union government has classified certain districts from various states as backward based on their levels of industrial activity. These districts have been further divided into three categories. Thus there are 131 districts of category 'A', 55 of category 'B' and 103 districts in category 'C' at the all India level. Uttar Pradesh has 15, 6 and 21 districts respectively in the three categories mentioned above.

A Central investment subsidy of 25 per cent upto a maximum of Rs.25 lakhs, 15 per cent upto a maximum of Rs.15 lakhs and 10 per cent upto a maximum of Rs.10 lakhs is admissible in category 'A', 'B' and 'C' districts.

(ii) Central Transport Subsidy : Upto 75 per cent of the cost of transportation of raw materials and finished products from location to the nearest rail head is reimbursed to units located in selected remote and inaccessible areas. All the eight hill districts of the state qualify for this subsidy.

(iii) State Capital Subsidy : This is granted in some selected blocks and tehsils in Gorakhpur, Ghaziabad and

Saharanpur districts to the Small, Tiny and Village industries at the rate of 10, 15 and 20 per cent respectively.

(iv) Interest Free Sales Tax Loan equal to sales tax paid upto Rs.40 lakhs in three years in the case of non-backward districts and Rs.50 lakhs paid in five years in the case of backward districts is refundable to units set up before 3.9.1982.

(v) Exemption from Octroi : All new units are granted exemption from Octroi on machines and building materials for a period of five years.

(vi) Generating Set Subsidy : This is admissible at the rate of Rs.500 to large and medium units and Rs.1000 to small scale units per KVA to the extent of 120 per cent of the connected load.

(vii) State Capital Subsidy for Export : Some selected industries which are totally export oriented are given a 10 per cent capital subsidy by the government.

(viii) Concessions Related to Power : (a) All new units are exempted from power cuts for a period of five years; (b) No minimum consumption guarantee is charged from new

units taking connection after 1.8.1980 for a period of one year; (c) a development rebate of 33.33 per cent on the amount of bill is given for loads upto 75 KW and also for heavy loads in the case of only hill districts to all new connections after 1.8.1980; (d) all new large and medium scale industries are allowed to pay only 50 per cent of the security deposit at the time of agreement while the balance is to be paid in four annual instalments; and (e) a power subsidy is available to 22 categories of S. S. I. units upto 20 HP load at the rate of 9 paise per unit.

(ix) Exemption from Sales Tax : This is admissible without any ceiling to all units set up between 1.10.1982 and 31.3.1985 for the periods ranging between 5 to 7 years. Thus 11 districts enjoy this facility for 7 years and 30 districts for 6 years. The remaining districts, which are non-backward, have this facility for 5 years.

Over and above these major incentives there are also some schemes which are being offered to either pioneer and prestige industries or to the small and tiny industries being set up in the state. Moreover, non-resident Indians are also being granted some facilities for setting up industrial projects in Uttar Pradesh.

7.2 Rationale of Subsidies

Fiscal and financial incentives and subsidies are provided to industries to offset their cost disadvantage that may arise due to the following reasons. One, a new industry has a high unit cost due to heavy initial investment and low unit revenue due to unestablished market. Two, the size of the units may be relatively small limiting their access to various inputs, on the other hand, and capacity to compete in the market with relatively larger sized units on the other. Three, the location of the industrial unit may be disadvantageous in terms of access and availability of inputs and proximity to the markets as well as underdeveloped infrastructure. The 'infant industry' argument which has traditionally been advanced for protection of indigenous industry against international competition has been used even independent of the foreign trade angle for promotion of industrial development of backward areas within the country in particular. In a newly industrialising economy, a new industry is regarded as 'infant' in view of undeveloped markets for the new products, high cost of new technology and relative lack of industrial entrepreneurship. Incentives and subsidies thus compensate to some extent for the high fixed costs due to initial low utilisation of

installed capacity, even high current costs due to small size of production resulting from the limited extent of the market and to reduce the risk element in industrial enterprise.

The disadvantages that an industry or an industrial unit faces primarily arise from the lack of either internal or external economies. A new unit takes sometime before it can mobilise and effectively use its inputs due both to technological and market reasons, and a small unit is unable to realise economies of scale due to small size of operations. The cost in either case is high due to the reasons internal to the unit. Similarly a unit located in an area where its raw material as well as market do not exist would have to incur high cost in transporting inputs and outputs. These disadvantages are faced by industries even when infrastructure facilities like transport, power, banking etc. are easily available. But in most cases it is the non-availability of some of these items that pose the most serious disadvantage. A new and small unit even though located in an infrastructurally well served area may not have access to certain utilities and inputs due to lack of resourcefulness, and the units located in an infrastructurally backward area would of course be at a greater disadvantage.

It would thus appear that creation of conditions where external economies of infrastructure and inter-industry linkages are adequately available and easily accessible to industrial units would be the surest way to accelerate industrialization of backward areas. But the disadvantages arising out of high internal cost of production in the case of infant and small units and transport cost of inputs and product in the case of units located in backward areas would need to be offset by fiscal and financial incentives in the interest of development of industries in general and in backward areas in particular.

Incentives and subsidies for industrial development in India have generally flowed from the policy objectives of acceleration of industrial growth, promotion of small scale industry and spatial dispersal of industries besides, of course, export promotion. Accordingly, fiscal incentives like tax concessions, reliefs and rebates, and financial incentives like capital subsidy and concessional rates of interest have been allowed to new and small units and units located in backward areas. But in the context of a policy on incentives and subsidies for industrial development in an industrially backward state like Uttar Pradesh, the question of locational disadvantages and therefore, incentives and subsidies to mitigate them,

becomes more important. That is why there has been a general emphasis on 'attracting' industries into the state in most of the incentives.

However, it should be very clear that the schemes of subsidies and incentives are not confined to the state of Uttar Pradesh alone. In fact all the states are running their own schemes of incentives in order to lure entrepreneurs and to attract industrial activity. We, therefore, find interest free sales tax loan under implementation in Punjab, Haryana, Himachal Pradesh, Jammu and Kashmir, Rajasthan, Tamil Nadu and West Bengal besides Uttar Pradesh. Similarly Octroi exemption is also being provided in Maharashtra and Gujarat. Same is the case with respect to sales tax exemption, generating set subsidy and the concessions related to power tariff. In a situation where most of the state governments are making various schemes of subsidies and incentives available, it really becomes doubtful if any one particular state can be truly effective in attracting entrepreneurs from other states.

A study conducted by the Giri Institute of Development Studies, Lucknow²⁷ analysing the impact of incentives to industries in Uttar Pradesh observes that only a small

²⁷ Joshi, A. and Papola, T.S., Subsidising Industrial Development : A Study of the Impact of Incentives to Industries in Uttar Pradesh, Giri Institute of Development Studies, Lucknow, April 1986.

proportion (20 per cent) of units have availed any kind of subsidy offered by the government. The Generating Set Subsidy was found to be the most popular followed by the state Capital Subsidy. Incentives related to Sales Tax were next in importance. The remaining subsidies were not found significant in importance.

The major reasons cited for low availment have been lack of awareness among entrepreneurs regarding these schemes and the rather cumbersome procedure involved in obtaining the subsidy or incentives. Yet another reason was that there were multiple incentives being given through various agencies which again complicated things. The entrepreneurs had expressed their desire in favour of a single subsidy or incentive. However, despite these drawbacks a comparative analysis of the units availing these subsidies and those not availing them clearly brought out the fact that units which had availed the incentives had a much better overall performance as seen in terms of growth in their production; employment generating capacity; and value of fixed and productive capital.

Although the amount of subsidy provided was not a high percentage of the actual size of fixed capital what emerged as significant was that the help was substantial in the case of the smaller sized units. It is the smaller

sized units which need greater encouragement particularly in the backward districts. The relatively better performance of these units also goes to suggest that these subsidies have achieved some degree of success in mitigating the disadvantages that any new unit faces due to initial trouble with respect to availability of finance, land and constructed sheds and raw material or the disadvantages of unfavourable location in a remote and backward area.

It is interesting to note that whatever be the basic objective of the different incentives, most entrepreneurs who have used them have found them useful in two ways : in making liquidity available at low or no cost and in lowering the fixed cost. It is also evident from the pattern of utilisation of different schemes; those which make funds directly available and are substantial in nature, like capital subsidy and sales tax incentives have been availed more often than other minor schemes. Even the generating set subsidy is, in fact, a cash subsidy which makes the liquidity position of a unit easier, although it helps in making a crucial input available. Not many entrepreneurs see the incentives as a direct measure for reducing current costs and thus competing in the market. It is basically the capital funds and the risk taking capacity, the lack of which is seen to offset by subsidies.

The low extent of utilisation of incentives may, therefore, primarily be attributed, first to the nature of certain incentives which help, but in ways other than reducing capital costs, and second, to the rather limited amount that one gets by way of funds after approaching a number of agencies and wasting lots of time. A single incentive from a single source, with a substantial amount of benefit in the form of direct or indirect funds would probably attract and induce a larger number of entrepreneurs than multiple incentives administered by several agencies each providing a small amount of specific help. It is seen that the units with relatively smaller capital investment have more often gone in for incentives, than those with larger investment, because the subsidy has meant a substantial proportion of their fixed and total capital. But very small units have availed the incentives to an insignificant extent because they could not afford to invest funds and time to avail them primarily because of multiplicity of benefits and agencies.

Thus there seems to be a case for a general subsidy in the place of various specific schemes, which augments the financial resources of new entrepreneurs in the initial stages of their production. During this period the main disadvantage faced is that of high fixed cost per unit due

to non-utilisation of capacity created out of substantial investment. This cost is basically in the form of interest on investment that takes time in yielding results. The general incentive could, therefore, take the form of interest subsidy on fixed capital investment. The entrepreneurs could be encouraged to invest their own funds supplemented by institutional finance, and interest on total investment could be subsidised to a suitable extent. This subsidy could be available to units for any does of investment that they make on expansion of their productive capacity any time.

This kind of a single generalised subsidy, should be administratively simpler to the extent only one subsidy on the basis of the assessment of the value of new investment is to be made. It should be convenient to entrepreneurs to the extent they have to meet the condition for one incentive only and deal with a single agency.

It would be argued that the generalised incentive could be in the form of a fiscal incentive like sales tax exemption, rather than a financial one. There are two problems with the fiscal incentives like tax exemption. One, it does not ensure creation of new capacity for production which should be the basic aim of any incentive for industrial production; and, two, it leaves the matter of

follow up to chance. A financial subsidy on fixed capital, by way of interest compensation, ensures creation of new capacity as it is consequent upon investment and its follow up is in the interest of the beneficiaries themselves.

It is, therefore, desirable that the scheme of incentives of industrial development are rationalised on the above lines, if they are to be made more popular with the entrepreneurs and more effective in their objectives of industrial development. The least that can be done, till such a generalised scheme is evolved is to reduce the number of incentives to a few of them which provide what the entrepreneurs are looking for to a more substantial extent.

7.3 Promotional Institutions in the State

Besides offering incentives and subsidies, which have been discussed above the state government, in its endeavour to speed up the rate of industrial development has established various institutions whose primary objective is to promote industrial activity in the state as a whole and in the backward districts in particular. Some of the prominent institutions set up in the state are being briefly discussed below.

(i) The Directorate of Industries

The Directorate of Industries, having its head office at Kanpur, is responsible for the overall industrial development in the state. This is the main implementing agency for

all industrial development programmes and has its functionalities right upto the block level to assist entrepreneurs beginning from the stage of identification of the project to implementation thereof. It also coordinates efforts of all other agencies entrusted with the task of specific functions for the overall industrial development efforts. District Industries Centres have been set up at the district level under the Directorate and have been assigned responsibilities such as promotion of small and village industries so as to increase employment opportunities, to appraise the entrepreneurs about the projects they can undertake and the types of assistance that can be availed. Some of the subsidies and incentives of the state government, mentioned earlier, are made available through the office of the General Manager, District Industries Centre.

(ii) Pradeshia Industrial and Investment Corporation of U. P.

The PICUP was established in 1971 with the objectives to offer administrative, financial and technical assistance to the large and medium scale industries. It provides assistance to new entrepreneurs in the identification of units and prepares feasibility reports and helps overcome the various problems faced by entrepreneurs. Some of the incentives made available through PICUP are term loan, equity participation, underwriting of shares, bridging

loan and the provision of IDBI's Seed Capital Scheme. Central Investment Subsidy, Sales Tax Refund Loan and Feasibility Report Subsidy are the other incentives administered by it.

Upto 30.9.1984 the PICUP had disbursed term loans to the tune of Rs.639.33 lakhs, Rs.150.02 lakhs as Interest Free Sales Tax loan and Central Investment Subsidy to the tune of Rs.17.15 lakhs.

(iii) The Uttar Pradesh Financial Corporation (UPFC)

This institution, having its head office in Kanpur, was set up in 1954. It grants term loans upto Rs.30 lakhs in case of companies and Rs.15 lakhs in proprietorship and partnership firms. It also grants foreign exchange loans to industrial units for the import of plant and machinery from member countries of the World Bank. It also operates the Generating Set Subsidy. The UPFC has also taken special steps in aiding the backward districts of the state.

Under the various special schemes of the government the UPFC had sanctioned and disbursed a total of Rs.3389.37 and Rs.2121.46 lakhs (cumulative figures) respectively upto 31.3.1985. Moreover during 1984-85 it had sanctioned to the extent of Rs.4476.62 lakhs to a total of 2588 units.

The role which the Uttar Pradesh Financial Corporation has played in backward area development can be assessed from Table 7.1, where Effective sanction and Disbursement of loans by the UPFC has been shown in backward and non-backward districts. It is quite evident from the table that in 1971-72 the bulk of sanction and disbursement whether in the case of small or other units was going in favour of the non-backward districts. However over the years there has been a complete reversal in the trend and by 1984-85 the backward districts were getting maximum loans for the small or other units.

Table 7.1 : Percentage Distribution of Effective Sanction and Disbursements of Loans by the UPFC between Backward and Non-Backward Districts

Year	Sanction		Disbursement	
	Small Units	Others	Small Units	Others
1971-72				
(a) Backward Districts	21.94	16.17	20.85	13.62
(b) Non-Backward Distt.	78.06	83.83	79.05	86.38
1979-80				
(a) Backward Districts	53.05	34.94	48.72	29.58
(b) Non-Backward Distt.	46.95	65.05	51.28	70.42
1984-85				
(a) Backward Districts	65.53	69.31	64.06	63.12
(b) Non-Backward Distt.	34.47	30.69	35.94	36.08

Source : Annual Reports of the UPFC.

(iv) The Uttar Pradesh State Industrial Development Corporation (UPSIDC).

This too has its head office located at Kanpur and was set up in 1961 with the objective of stepping up the pace of industrial development in the state. It arranges the necessary infrastructure particularly developed sites besides providing equity participation, underwriting of shares, sanction of bridging loan and implementing projects in the joint and assisted sectors. In the 14 joint and assisted sector units where the UPSIDC is involved it has invested a total of Rs.2964 lakhs approximately.

(v) Uttar Pradesh Small Industries Corporation (UPSIC).

The UPSIC, which also has its headquarters at Kanpur, arranges for the raw material requirements of the small scale industries. It also renders marketing assistance and hire purchase facilities for the procurement of equipments.

Besides these major institutions there are others which have been set up to cater to the specific needs of industries such as textiles, leather, sugar etc.

7.4 Infrastructure Development

Besides offering various subsidies and incentives and establishing a number of promotional institutions in

the state so as to boost the pace of industrial development, the government has also realised and accepted the importance of infrastructure in industrial development. The importance of infrastructure, or social overhead capital, as it is some times called, has been recognised by all. Some, in fact, feel that it is a necessary prerequisite of economic development. Even in the frame work of state led development process an increasingly large part of it has come to be recognised to be a pre-condition of development. Thus to say that infrastructure plays an important role in development sometimes becomes tantological to the extent the items included in infrastructure and directly productive activities and, therefore, account for part of development themselves. Then there are sectors and activities which directly help development of productive sectors such as power, transport and communication services and financial and promotional institutions. These sectors directly assist the industrial sector.

The state government, realising the significance of infrastructural development, has invested successively larger amounts of money during the plans to provide better infrastructure facilities in Uttar Pradesh. This investment has led to substantial improvement in the infrastructure facilities in the state. Table 7.2 gives plan-wise investment on some selected infrastructure items in the state.

It is quite evident from the table that very heavy investments have been made for the development of power and roads. From around one-fifth in the First Plan their share in total plan outlay to around 42 per cent by the Sixth Plan.

Table 7.2 : Plan Expenditure on Selected Infrastructure Facilities in Uttar Pradesh.

(Rs. Lakhs)			
Plan	Power	Road	Transport
First Plan	2331 (15.20)	551 (3.59)	135 (0.88)
Second Plan	5675 (24.32)	1453 (6.23)	66 (0.28)
Third Plan	15701 (28.01)	2907 (5.01)	-
Fourth Plan	44651 (38.31)	7015 (6.02)	730 (0.63)
Fifth Plan	83910 (40.08)	12824 (6.12)	2467 (1.18)
Annual Plan 1978-79	28113 (34.47)	7750 (9.50)	966 (1.19)
Annual Plan 1979-80	28402 (30.65)	7676 (9.25)	745 (0.90)
Sixth Plan	215300 (34.72)	41500 (6.69)	12000 (1.94)

Figures in brackets are percentage to total plan outlays.

Source : Plan expenditure in Uttar Pradesh, State Planning Commission, U.P., October 1982.

As a result of this investment there was a considerable development of infrastructure facilities (Table 7.3).

Table 7.3 : Regionwise Development of Selected Infrastructure Facilities in Uttar Pradesh

Region	Length in KM of Metal- led Roads per 000 Sq. KM. of Area			% of Electrified to total villa- ges			No. of Banks per lakh of Popula- tion		
	1960-61	1970-71	1980-81	1961	1971	1981	1961	1971	1981
Western	97.17	102.49	172.66	2.09	29.48	42.84	0.86	1.72	4.74
Central	78.53	80.77	150.18	0.54	13.44	38.06	0.65	1.49	4.88
Eastern	87.81	104.16	168.76	0.54	19.01	31.62	0.39	0.99	3.70
Hill	45.11	N.A.	164.15	0.16	3.43	26.47	1.51	3.11	8.07
Bundelkhand	62.89	70.51	130.53	N.A.	9.46	22.44	0.60	1.21	4.11
U. P.	82.12	90.04	162.34	0.86	18.40	34.31	0.66	1.44	4.49

It is quite evident from Table 7.2 that over the years a reasonable development of infrastructure facilities has taken place although the development is still low. The length of roads has almost doubled between 1961 and 1981. While less than one percent of the villages were electrified in 1961 the percentage stood at 34.31 in 1981. Similarly, there was also a considerable increase in number of banks per lakh of population.

The Western Region has always been ahead of the state average and has always been top ranked with respect to roads and power. In the case of banking facilities, however, Hill region is ranked first. But we should keep in mind the fact that the Hill region has a lower density of population and this could have boosted

the figure of bank branches per lakh of population. Bundelkhand is the lowest ranked in every case and at each point of time its performance has been below the state average.

Infrastructure facilities have played at least some role in the industrial development of the state. Districts such as Lucknow, Meerut, Kanpur, Agra and Ghaziabad for instance, where industries are found in large numbers, are the districts where infrastructure too is relatively more developed.

Yet another measure which has been taken up specifically for the promotion of industrial development has been the development of industrial estates. Industrial estates have been developed so as to provide the entrepreneurs all possible facilities that are required while setting up a new unit. Industrial estates provide developed land, constructed sheds, and infrastructure facilities like power, roads, banking services etc. to the entrepreneurs. They are primarily located in backward districts.

By December 1984 there were 91 Industrial Estates in the state. Of these 80 were under the control of the Directorate of Industries. They had, in all, 1116 sheds and 3254 plots. Of these 913 sheds had been allotted and production had begun in 768 sheds. These units together had an annual production estimated at around Rs.76.50 crores and they were providing gainful employment to nearly

18050 persons.

To sum up, therefore, the state government has certainly made positive efforts to promote industrialisation and that its policies have been aimed towards the development of backward areas. This is evident from the fact that the incentives and subsidies are either exclusively for the backward areas or the amount of subsidy is higher for the backward areas as compared to the non-backward districts. Moreover industrial estates are generally established in the backward districts in order to facilitate industrial activity there. Besides this, the promotion institutions such as the UPFC has been granting gradually a higher share of the loans and its disbursement in the backward districts as compared to non-backward districts.

CHAPTER VIII

Conclusion

CHAPTER VIII

Conclusion

8.1 The Problem and Objective of the Present Study

The problem of industrial location has been one of considerable significance. Even from the policy viewpoint it has assumed special significance since the removal of inter-regional imbalances and the development of backward areas has been accepted as important objectives of economic and industrial policy. To begin with, industrial development was based, to a considerable extent, on raw material availability and the natural endowments of the region. Over the years, however, the very production process has undergone significant change and a number of industries today are those which do not depend so much on the availability of local raw material but on semi-processed and intermediate products as their basic inputs. This has added a new dimension to industrial location which can no longer be explained today under the simple framework in which the transport cost and availability of material inputs were the only significant factors. A footloose type industry has the advantage that it can be located almost anywhere provided the other important factors are also present.

The primary purpose of the present study has been to try and analyse the locational pattern of industries within the state of Uttar Pradesh during the period 1961 and 1980-81. The major objectives were to study the extent of concentration and diversification of industries across the districts and examine the distributive pattern of factories on a district-wise basis. The aim has also been to try and analyse some of the factors responsible for the pattern which emerges and to draw a suitable policy which can aid industrial activity and its dispersal especially in the backward districts, since in Uttar Pradesh as many as 42 out of its 57 districts are classified backward districts from the point of view of industrial development.

8.2 Growth and Structure of Industries

During the period under consideration the number of industries went up by around 21 per cent while factory employment had an increase of around 14.5% per annum. Talking in terms of broad industrial categories - the resource based, capital and intermediate and consumer goods units based on non-local material, it was observed that in the initial period it was the natural resource based units which were more important from the point of view of number of units while the capital and intermediate

goods manufacturing units more important as far as employment was concerned. By 1980-81 the consumer goods manufacturing units not based on local raw material had the maximum share in total units. Highest employment was found in the natural resource based ones.

Going further into the structure deeper it was seen that the most important industry group in the state has been the food products group. Other important industry groups to register a relatively fast rate of growth have been paper and paper products, chemicals, non-metallic mineral products, etc. The industry groups such as chemicals, non-metallic mineral products and basic metals and alloys have a recent origin but have emerged as significant.

There are five economic regions into which the state is divided. Of these the most developed region is the Western Region followed by the Central. The remaining regions are less developed and among these also Bundelkhand in particular has a very poor level of development in general and with respect to industrial development in particular.

With the growth of industries in the state, industrial activity has also taken place among the backward districts although at a lower rate and by 1980-81 there were 37

backward districts in the state with registered factories which together claimed only around one-fourth share of the total units as well as in factory employment. A phenomenon noticed in the case of the backward districts is that growth has been relatively higher in the case of those backward districts which have an adjoining non-backward district. The limited information available for the small scale industries brings out the fact that this sector has experienced a phenomenal growth in units, employment as well as output. Thus the small scale industries seem to have quite a potential for growth.

8.3 Inter-Regional and Inter-District Disparities in Levels of Industrial Activity

The state depicts a picture of considerable inter and intra-regional disparities and also between districts in the levels of industrial activity. The share of the Western Region in both total number of units, employment as well as output has increased over the years. This has been at the cost of the Central Region in particular whose shares in units, output and employment have declined in 1980-81 as compared to 1961. There has not been any significant change in the relative position of the remaining regions.

Even within regions there are considerable disparities. In each region industrial activity is found highly concentrated in some selected districts. Thus Agra and Ghaziabad from the Western, Kanpur and Lucknow from Central, and Varanasi from Eastern Regions/where are districts units were found concentrated. Over the years other districts have also come up but not much dent seems to have been made as far as the problem of disparities is concerned. The coefficient of variation between districts and total number of units located in them was 142.54 in 1961 and 143.67 for 1980-81 indicating a slight increase in the extent of disparities.

While in the less developed districts the industrial base centred around one industry group, even in districts which apparently had a more diversified structure, in effect had very few industries which could be said to constitute their industrial base. This aspect was brought out when district-wise location quotients were calculated. Only a few districts, Agra, Aligarh, Ghaziabad, Saharanpur, Kanpur, Moradabad and Varanasi had a location quotient of more than 1 for four or more major industry groups.

The changes in industrial activity have been substantial when looked at from the point of view of output and employment growth. However, in terms of the contri-

bution of output from manufacturing to the Net Domestic Product from commodity producing sectors the increase has been from 11.5 per cent in 1960-61 to 18.5 per cent in 1980-81. Only 14 out of all the districts had a higher contribution of the manufacturing sector to NDP from the Commodity Producing Sectors, than the state average in 1980-81. Ghaziabad with 59.9 per cent and Lucknow with 52.9 per cent contribution were the top ranked districts. Hardoi, Bahraich, Jalaun, Garhwal and Tehri were in the lowest bracket each contributing around 3 per cent only from the manufacturing sector towards the District Domestic Output.

8.4 Inter-District Variations in Industrial Activity

In 1961 only 37 districts had registered factories located in them. This number increased to 48 by 1971 and went up further to 51 in 1980-81. Considerable variations were experienced in the employment and output between these districts. This aspect was viewed by taking employment and output growth between 1961-1971, 1971-1980-81 and 1961-1980-81. There was hardly any difference between the three periods in the number of districts having higher or lower growth of employment than the state average. The number of districts having employment growth above state

average remained around 60 per cent. But there was a constant shifting of districts between high and low growth between one period and the other. Consequently a district having higher than average growth between 1961-71 got relegated to the low category in the next period since its employment growth could not keep pace with the employment growth of the state. However, as many as 11 districts maintained a high growth during all the three periods. While three districts were always in the low category. The backward districts having a very low initial employment generally registered a very high growth between 1961-1971. On the other hand, many developed districts, despite a considerable absolute increase in employment could not match the overall growth rate of the state. However, it must be kept in mind that the high growth is only because the employment was very low to begin with in the backward districts.

Even in the case of output/^{there were}considerable variations between districts. Some districts, both backward and non-backward had very high output growth while the performance of some was not good. Similarly, a district with high growth in say 1961-71 found itself in the low growth category in the next period. While there was no difference in the total number of districts which always had a high output growth and high employment growth, the number of

districts always having a low output growth was found 14 as against 3 in the case of employment growth which goes to show that the units have found it much more difficult to maintain a high rate of growth of output.

What has been described so far is the output growth at current prices. When outputs for 1971 and 1980-81 at is analysed then the constant 1961 prices/in the case of 13 districts an absolute decline was found between at least one time period. Deoria and Basti were the districts whose deflated values of output for both 1971 and 1980-81 was found lower than that of 1961. Kanpur which has been a prominent industrial district experienced a growth in employment and output at a rate below the state average.

There were 10 districts which had no registered factory in 1961, so these were taken separately and their growth worked out for the period 1971-1980-81. All except for Almora had an employment growth below the state average. However, 4 districts had output growth of a high order primarily so since even in 1971 their level of output was relatively low. The remaining 6 districts not only had a low growth of output but their output showed an absolute decline when reduced to constant prices.

8.5 Inter-District Variations in the Structure of Industries

Along with variations in the industrial activity between districts there were also variations in the product structure. At the initial period the uneven distribution in the industrial activity was primarily as a result of the historical evolution of industries. In 1961 there was a very high dominance of raw material based industries. As a result of this industries got located around regions which had easy accessibility of raw materials. Moreover there were also differences in the overall endowments of different districts. Changes in the product structure has been analysed for the prominent industry groups - those which have industries in at least 10 districts. In 1961, therefore, the food products units were located in 15 out of the 37 districts among which the prominent districts were Muzaffarnagar, Meerut and Gorakhpur. The only other industry groups were the cotton textiles and machinery and machine tools manufacturing units. In both groups Meerut and Kanpur were the important districts. In fact Kanpur alone accounted for around 68 per cent of the total employment in the cotton textile industry.

By 1971, however, there was sufficient evidence to show that the product structure of the state had got

reasonably diversified since as many as eight industry groups had their units located in as many as 36 districts. This was possible primarily because of the emergence of those industry groups which do not depend upon the availability of local raw material. The new industry groups to emerge as important have been chemicals, non-metallic products, basic metals and alloys, metal products and parts and the electrical equipment manufacturing industries. Their dominance in the industrial structure can be gauged from the fact that while in 1961 food products and cotton textiles had jointly accounted for 75.58 per cent of total factory employment and 84.43 per cent of the total output, by 1971 these percentages had come down to around 36 per cent each for employment and output respectively. This trend was maintained even in 1980-81 although no more industry groups emerged as important.

The specialisation pattern of the districts was analysed with the help of the coefficient of specialisation which was computed for each district separately for 1961 and 1980-81. The coefficient assists in trying to find out the extent to which the industrial structure of any district is as diversified as that of the state. Thus when the value of coefficient is zero it means that the structure is as diversified as that of the state while a value nearing one suggest that the structure is

highly concentrated in only one or two industry groups. In 1961 there were only three districts out of 37 namely Meerut, Kanpur and Gorakhpur where the value of the coefficient was found to be less than 0.5. By 1980-81 however 13 districts out of these 37 had a coefficient of specialisation below 0.5. Among the new entrants two more districts had a coefficient below 0.5.

Not only has the state experienced a diversification in its product structure, the levels of capital efficiency and productivity have also gone up especially in the new industry groups. This has been brought out quite clearly when capital, output and value added per worker is compared at the three points of time. However, what emerges as significant is that despite product diversification, the food products group continues to be the single most important industry group. In fact its share in total employment has gone up marginally in 1980-81 as compared to 1961 although its share in total output has been reduced from slightly over one-half to around one-fourth.

8.6 Industrial Development vis-a-vis Agricultural and Infrastructural Development

An attempt to try and relate industrial development with the level of agricultural and infrastructural development whether
ment was made to see/these factors are a sufficient or a

necessary condition for growth. In 1961 two-third of the districts having food products units located in them had a higher value of agricultural produce per hectare than the state average. This however was not the case in 1980-81 where only around half the districts (55.55) per cent of the districts had a higher value of agricultural produce than the state average.

Infrastructure too can be effective in the locational decision making. In 1961 it was observed that by and large industries of the prominent industry groups were attracted more to the districts which had a relatively better level of infrastructural development.

Over and above the descriptive observations the analysis was further extended by working out regressions on number of industrial units and employment with the indicators of agricultural development and infrastructure such as roads, power and banking facilities.

In 1961 road transport and banking facilities turned out to be the significant variables in explaining growth of industrial activity and in 1971 banking facilities alone was significant. In 1980-81 indicators related to agricultural development such as value of agricultural produce and the area under cash crops were more significant. On the whole, therefore, what emerges is that

while the levels of agricultural and infrastructural development may be helpful in aiding industrial activity as seen in the case of districts such as Saharanpur, Meerut, Muzaffarnagar, Ghaziabad, Kanpur, Lucknow, Allahabad and Varanasi, one should not unduly over-emphasise their importance unduly.

8.7 Role of the State in Promoting Industrial Dispersal

Ever since the inception of planning attention has been given to the problem of inter-regional disparities. Some efforts were made during the first three plans to achieve a reduction in inter-regional disparities but the results achieved were not very satisfactory. The Fourth Plan, therefore, witnessed the introduction of a wide range of incentives and subsidies to promote industrial activity particularly in the backward areas of the state. The various subsidies are by and large capital subsidies, tax reliefs, subsidies related to power along with generating set subsidy and some minor ones. These incentives and subsidies are provided by the government so as to offset some of the cost disadvantages which a new unit faces during the initial stages as a result of high unit cost on one hand and low revenue on the other. High unit cost is due to the heavy initial investment while low revenue is the result of an unestablished market. Dis-

advantages may also arise as a result of undeveloped infrastructure.

An analysis of the various subsidies based on a primary survey of some selected industries brought out the fact that the level of availment of these schemes is low with only around 20 per cent of the units having availed of any one or more type of subsidy. However, what was significant was that the performance of units which had availed the schemes of subsidies and incentives was found to be much better as compared to those which did not avail any subsidy. The better performance is evident with respect to growth of capital, output as well as employment. Moreover, these subsidies seem to have proved more beneficial to the relatively smaller sized units since the subsidy involved is not a very large amount. In the backward districts the units are generally small sized and thus it appears that they have benefited more as compared to the non-backward districts. For the large sized unit these subsidies mean only a small proportion of their fixed investment. And since at present the procedure of availment is rather cumbersome and time taking, the bigger sized units in general do not seem to have much inclination for their availment.

Another fact that emerges is that whatever may have been the basic objective of a subsidy, the entrepreneurs

have found them useful for either making liquidity available at low cost or in lowering the fixed cost.

Besides introducing these schemes of subsidies, the government has also set up various promotional institutions of which PICUP and UPFC are but two. All these institutions have been handing out help - both financial and otherwise - to promote industrialisation in general and in backward areas in particular. Development of infrastructure is yet another responsibility which the government has taken on itself and has achieved considerable degree of success over the years.

8.8 Conclusion

To sum up, therefore, Uttar Pradesh which initially had a poor industrial sector has been successful in achieving a reasonable growth of industrial sector since 1961. The development is visible not only in terms of increased numbers of factory units and of factory employment but also in a more diversified industrial structure where the modern footloose type industries have been consistently gaining in importance. However, the food products manufacturing units especially the sugar and Khandsari and edible oil producing units continue to maintain their dominance in spite of the emergence of the modern industries. Obviously, the easy availability of

raw materials viz. sugarcane and oil seeds has contributed significantly towards their growth as it provides a distinct locational advantage.

While during the initial period industrial activity was highly concentrated around a few selected districts, today industries are found located in almost all the districts of the state. Consequently, the relative position of the backward districts has improved. However, those backward districts seemed to have gained more which are in close proximity of non-backward and industrially developed districts.

In spite of the industrial development achieved over the period of two decades, not much dent seem to have been made towards reduction of inter-regional disparities. If anything, the disparities seem to have gone up slightly and so while the Western Region remains the most developed, the Hill and Bundelkhand Regions continue to be industrially backward even today.

In order to tackle the problem of inter-regional disparities it would be advisable to select those industry groups in a region which enjoy a relative advantage as brought out with the help of location quotients. These and other interlinked industries can then be developed

such that they provide a chain of forward and backward linkages.

Another fact which is brought to light is that while initially factors such as developed agriculture and infrastructure, may have aided industrialisation, these two factors by themselves are not enough to explain locational advantage in the present day context. While considerable improvement has been achieved in infrastructure development what is more important is to ensure better delivery and utilisation of the created infrastructure.

The promotional measures taken by the state government have certainly been helpful in aiding the process of industrial development. But these have to be rationalised so as to ensure a higher degree of availment than obtained at present. For this it would be more worthwhile to have a single generalised subsidy which augments the financial resources of new entrepreneurs in the initial stages of their production. Such a scheme should also prove easy from the administrative point.

On the whole, factors such as availability of raw material, infrastructure and universal intermediaries, proximity to markets and agglomeration as well as promotional measures all emerge as important factors in

industrial location. However, it is not always possible to explain location independently with the help of any one factor.

To conclude, therefore, if a meaningful policy of industrial dispersal is to be framed for achieving industrial development of the regions, two crucial factors must be planned on a scientific basis. First, infrastructure facilities, which directly and indirectly aid the process of industrial development, should be adequately developed. The government has realised its importance and attention is already being paid to infrastructural development over the plans and improvements in the regional distribution of these facilities have also been observed. Secondly, planning for industrialisation of a region should be centered around an agglomeration of inter-related industries which provide a chain of forward and backward linkages. The agglomerations may be small, to begin with, but it is only through their inter-relationship that the industrially less developed regions could come up. In fact, it would be rather uneconomical to think of dispersal of industries in extreme way, that is, to locate industrial units in ones and twos in most backward areas, especially those which are at present remote and have very deficient infrastructure. It will probably be more meaningful to develop regional centres where a well linked industrial agglomeration can be located and effectively developed.

BIBLIOGRAPHY

BIBLIOGRAPHY

BOOKS

1. Alagh, Y.K., Regional Aspects of Indian Industrialisation, Bombay University Press, 1972.
2. Alexander, P.C., Industrial Estates in India, Asia Publishing House, Bombay, 1963.
3. Bale, J., The Location of Manufacturing Industry, Edinburgh, Oliver and Boyd, 1976.
4. Behari, Bipin, Rural Industrialisation in India, Vikas Publishing House, New Delhi, 1976.
5. Bhagwati, J.N., and Desai, P., India : Planning For Indian Industrialisation, Oxford University Press, 1970.
6. Bharti, R.K., Industrial Estates in Developing Economics, National Public House, New Delhi, 1978.
7. Bhattacharya, S.N., Development of Industrially Backward Areas : The Indian Style, Metropolitan Book Co. Pvt. Ltd., New Delhi, 1981.
8. Bos, H.C., The Spatial Dispersion of Economic Activity, North Holland Amsterdam, 1965.
9. Chang, P.K., Agriculture and Industrialisation The Adjustments that take place as an Agricultural Country Industrialised, Cambridge (Massachusetts), 1948.
10. Chaudhari, M.R., Indian Industries, Development and Location, Oxford and IBH Publishing Co., Calcutta, 1965.
11. Estall, R.C., and Buchanan, R.O., Industrial Activity and Economic Geography, Hutchinson University Library, London, 1966.
12. Friedman, J., and Alonso, W., Regional Development Planning, MIT Press, Cambridge, 1964.

13. Glasson, J., An Introduction to Regional Planning, Hutchinson Educational, 1974.
14. Godbole, M.D., Industrial Development Policies, Himalaya Publishing House, Bombay, 1978.
15. Gopi, K.H., Urban Growth and Industrial Location, Oxford and IBH Publishing Co., New Delhi, 1980.
16. Greenhut, M.L., Plant Location in Theory and Practice University of North Carolina Press, Chapel Hill, North Carolina, 1956.
17. _____, A Theory of the Firm in Economic Space, Meredith Corporation, New York, 1970.
18. Hansen, A.H., The Process of Planning, Oxford University Press, 1966.
19. Hansen, N.M., (ed.), Growth Centres in Regional Economic Development, Free Press, New York, 1972.
20. Hirsch, S., Location of Industry and International Competitiveness, Clarendon Press, Oxford, 1967.
21. Hirschman, A.C., The Strategy of Economic Development, New Haven, 1969.
22. Hoffman, W.G., The Growth of Industrial Economics, Manchester University Press, 1958.
23. Holland, S., The Regional Problem, London, Macmillan, 1976.
24. _____, Capital Versus The Regions, Macmillan, 1976.
25. Hoover, E.M., The Location of Economic Activity, McGraw Hill, New York, 1948.
26. _____, An Introduction to Regional Economics, New York, Knopf, 1975.
27. Isard, W., Methods of Regional Science, Cambridge, MIT Press, 1960.

28. _____, Location and Space Economy, MIT Press Cambridge (Massachusetts), 1956.
29. Isard, W., Schooler, E.W., and Vietorsiz, T., Industrial Complex Analysis and Regional Development, MIT Press, 1959.
30. Kulkarni, M.R., Industrial Development, National Book Trust, New Delhi, 1971.
31. Lahiri, T.B., (ed.), Balanced Regional Development, Oxford, New Delhi.
32. Lakadawala, D.T., Alagh, Y.K., and Sharma, A., Regional Variations in Industrial Development, Sardar Patel Institute for Social Science Research, Ahmedabad, 1974.
33. Lee, D., Regional Planning and Location of Industry,
34. Leven, C.L., Legler, J.P., and Shapiro, P., An Analytical Framework for Regional Development Policy, Cambridge, MIT, 1970.
35. Losch, A., Die Routliche Orduung Der Wirtschaft, (2nd ed.) Jena, 1944, Translated by Stalper, W.F., as the Economics of Location, New Haven, 1954.
36. Mehta, M.M., Structure of Industries, Popular Book Depot, Bombay, 1961.
37. Menon, K.S.V., Development of Backward Areas Through Incentives, Vidhya Vahini, Bombay, 1979.
38. Miller, E.W., A Geography of Manufacturing Industry, New Jersey, 1962.
39. Misra, R.P., Urs, D.V., and Natraj, V.K., Regional Planning and National Development,
40. Misra, R.P., Sunderam, K.P., and Prakash Rao, Regional Development Planning in India, A New Strategy, Vikas Publishing, New Delhi, 1974.
41. Mukherjee, I.N., Productivity Growth and Structural Change in Indian Industries, Seema Publications, Delhi, 1983.

42. Myrdal, G., Economic Theory and Underdeveloped Regions, Indian Edition, Vora and Co. Publishers, Bombay, 1973.
43. Paelinck, J.H., and Nijkamp, P., Operational Theory and Methods in Regional Economics, Gower, 1975.
44. Richardson, H.W., Regional Economics : Location Theory, Urban Structure and Regional Change, Weinderfield and Nicholson, London, 1969.
45. _____, Regional and Urban Economics, Penguin Books Ltd., England, 1978.
46. _____, Elements of Regional Economics, Harmondsworth, Penguin, 1969.
47. _____, Regional Growth Theory, London Macmillan, 1973.
48. Sharma, T.R., Location of Industries in India, Hind Kitab Ltd., Bombay, 1946.
49. Shukla, S.K., Location of Industries in Madhya Bharat, Platean, Sahitya Ratnalaya, Kanpur, 1979.
50. Smit, D.M., Industrial Location, Wiley, New York, 1971.
51. Stilwell, F.J.B., Regional Economic Policy, London Macmillan, 1972.
52. Stolper, W.F., The Economics of Location, Yale University Press, London, 1978.
53. Sunderam, K.V., Urban and Regional Planning in India, Vikas Publishing House, New Delhi, 1977.
54. Tinbergen, J., Development Planning, Widenfield and Nicholson, London, 1967.
55. Townroe, P., Planning Industrial Location, Leonard Hill Books, London, 1976.
56. Utton, M.A., Industrial Concentration, Penguin, 1970.
57. Weber, A., Theory of the Location of Industries, Translated in English by Carl J. Fredrich, 1929.

ARTICLES, WORKING PAPERS AND REPORTS

1. Alonso, W., "Industrial Location and Regional Policy in Economic Development" Working Paper 14, Institute of Urban and Regional Development, 1968.
2. Churchill, G., "Production, Technology, Imperfect Competition and Theory of Location", A Southern Economic Journal, Vol.34, 1967.
3. Clark, Colin, "Industrial Location and Economic Potential", Lloyds Bank Review, October, 1966.
4. Greenhut, M.L., "Integrating the Leading Theories of Plant Location", Southern Economic Journal, Vol.18, 1952.
5. Hansen, N.M., "Development Pole Theory in a Regional Context", Kyklos, Vol.XX, 1967.
6. Hotteling, H., "Stability in Competition" Economic Journal, March, 1929.
7. Joshi, A., Papola, T.S., "Subsidising Industrial Development : A Study of the Impact of Incentives to Industries in Uttar Pradesh", Giri Institute of Development Studies, Lucknow, April, 1986.
8. Law, D., "Industrial Movement and Locational Advantage", Manchester School, May, 1964.
9. Lerner, A.P., and Singh, H.W., "Some Notes on Duopoly and Spatial Competition", Journal of Political Economy, Vol.45, 1939.
10. Loasby, B.J., "Making Location Policy Work" Lloyds Bank Review, January, 1967.
11. Moses L.N., "Location and Theory of Production", Quarterly Journal of Economics, Vol.72, 1958.
12. Needleman, L. and Scott, B., "Regional Problems and the Policy of Attracting Industry to Periperal Regions of Britain" The Lothians Regional Survey and Plan (H.M.S.O., Edinburgh, 1966)

13. Papola, T.S., "Spatial Diversification of Manufacturing Industries" in Studies on the Development of Uttar Pradesh, Giri Institute of Development Studies, Lucknow Occasional Papers, Vol.1.
14. Papola, T.S., and Joshi, A., "Uttar Pradesh, A Lot Remains to be Done", Commerce, Annual Number, 1980.
15. Papola, T.S., and Tewari, R.T., "Impact of Concessional Finance on Industrial Development of Backward Areas : Study in Uttar Pradesh" Giri Institute of Development Studies, Lucknow.
16. Papola, T.S., "Spatial Diversification of Manufacturing Industries" Giri Institute of Development Studies, Lucknow, Occasional Paper No.3 (1978).
17. Pavaskar and Kasbekar, "Regional Development, Growth Pole Theory for Propulsive Industry" The Economic Times, May 3, 1984.
18. Perroux, F., "Note Sur La Notion De Pole Die Croissance" Economic Applique, Vol.8, 1955.
19. Sandesara, J.C., "Industrial Growth in India", The Indian Economic Journal, Vol.30, No.2, Oct-Dec., 1982.
20. _____, "Incentives and Their Impact - Some Studies on Small Industry", Economic and Political Weekly, Vol.17, No.48, November, 1982.
21. Sekhar, Udai, A., "Industrial Location Policy : The Indian Experience", World Bank Staff Working Paper, No.620, Washington D.C., 1983.
22. Shethy, S.L., "Industrial Growth and Structure : As Seen Through Annual Survey of Industries" Economic and Political Weekly, Vol.17, Nos.40 and 41, October, 1982.
23. Simon, H.A., "Theories of Decision Making in Economics", American Economic Review, Vol.49.
24. Smithies, A., "Optimum Location in Spatial Competition", Journal of Political Economy, June, 1941.
25. Townroe, P.M., "Location Choice and Individual Firm", Regional Studies, Vol.3, 1969.

GOVERNMENT PUBLICATIONS

1. Reserve Bank of India, Bombay, Reserve Bank of India Bulletin, 1963 and various other years to estimate constant prices.
2. State Government of Uttar Pradesh, Uttar Pradesh Ke Krishi Aankade," Directorate of Agriculture, Statistical Cell, Lucknow, 1960-61, 1970-71 and 1980-81.
3. _____, Annual Survey of Industries, Uttar Pradesh State Planning Institute, Economics and Statistics Division, Lucknow, 1961, 1971 and 1980-81.
4. _____, District Domestic Net Output U.P. (Commodity Producing Sectors), Bulletin No.166, (1969), 187 (1977-78 and 1978-79) and 197. Economics and Statistics Division, State Planning Institute, Uttar Pradesh, Lucknow.
5. _____, "Uttar Pradesh Mein Uddyogon Ka Vikas - Pragati Sameeksha", 1983-84 and 1984-85.
6. _____, "Uttar Pradesh Ki Arthik Sthiti Ke Abhigyan Hetu Vikas Sanketak", Economics and Statistics Division, State Planning Institute, Uttar Pradesh, Lucknow, 1979, 1980, 1982 and 1983.
7. _____, "Statistical Abstract", Economics and Statics Division, State Planning Institute, Lucknow, 1973-74, 1982-83.
8. _____, "Districtwise Indicators of Development", Area Planning Division, State Planning Institute, Uttar Pradesh, Lucknow, 1983.
9. Uttar Pradesh Financial Corporation, Kanpur, Annual Report and Accounts, 1974, 1975, 1984 and 1985.